ORDER NO. DAD84020066C9

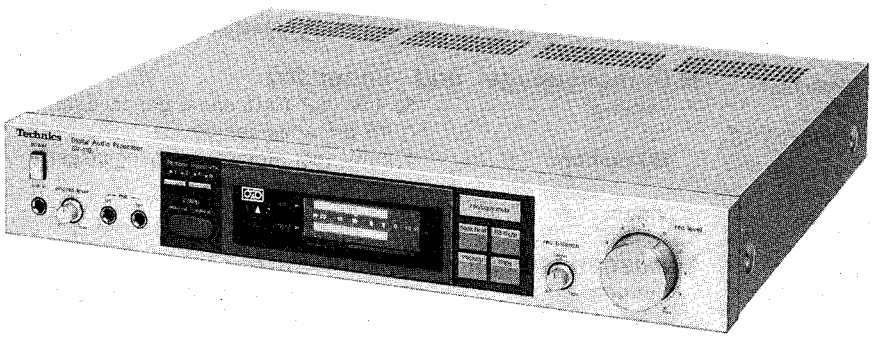
# Service Manual

DIGITAL

Digital Audio Processor

## SV-110/(K)

[E], [EK], [EG], [EB], [EH], [EF], [Ei], [XA], [PC]



***The colors of this model include silver and black.**
***The black type model is provided with (K) in the Service Manual.** SV-110 (K)

**Notes:**
*Sets for [PC] area are of NTSC format.
*Set for [XA] area are available in NTSC format and PAL/SECAM format.
*Sets for other areas are of PAL/SECAM format.

**Areas**

* [E] is available in Switzerland and Scandinavia.
* [EK] is available in United Kingdom.
* [EG] is available in F.R. Germany.
* [EB] is available in Belgium.
* [EH] is available in Holland.
* [EF] is available in France.
* [Ei] is available in Italy.
* [XA] is available in Southeast Asia, Oceania, Africa, Middle Near East and Central South America.
* [PC] is available in European Audio Club.

English

## Specifications

Specifications are subject to change without notice for further improvement.
Weight and dimensions shown are approximate.

### ■ General

**Power supply:** ~110/120/220/240 V, 50/60 Hz
**Power consumption:** 40 W
**Dimensions:** 43 W×37.5 D×7.6 H cm (16 15/16"×14 3/4"×3")
**Weight:** 6.1 kg (13.7 lb.)

### ■ System type

**Type:** Digital audio processor
**PCM standard:** Consumer PCM encoder/decoder standards file STC-008 (for PAL/SECAM format), STC-007 (for NTSC format) of the EIAJ stereo technical committe, video technical committee.
**Quantization:** 14-bit linear.
**Coding:** 14-bit linear
**Number of audio channels:** 2 (L, R stereo)
**Frequency response:** 2 Hz~20 kHz (±0.5 dB)
**Total harmonic distortion:** 0.01% or less (1 kHz, 0 dB)
**Dynamic range:** 86 dB or more
**Wow & flutter:** unmeasurable (Below measurement threshold)

### ■ Input level and impedance

**Line:** 55 mV [at reference input level (−15 dB indication)]/50 kΩ
**Microphone:** 1.1 mV [(at reference input level (−15 dB indication)]/600Ω
**Video:** 1 Vp-p/75Ω

### ■ Output level and impedance

**Line:** 310 mV [at reference output level (−15 dB indication)]/220Ω
**Video:** 1 Vp-p/75Ω
**Monitor:** 1 Vp-p/75Ω

Technics

**Matsushita Electric Trading Co., Ltd.**
P.O. Box 288, Central Osaka Japan

**Panasonic Tokyo**
**Matsushita Electric Industrial Co., Ltd.**
1-2, 1-chome, Shibakoen, Minato-ku, Tokyo 105 Japan

Deutsch

# TECHNISCHE DATEN

Änderungen der technischen Daten vorbehalten.
Die angegebenen Gewichts- und Abmessungsdaten sind ungeähre Werte.

## ■ Allgemeines

**Stromversorgung:** ~110/120/220/240 V, 50/60 Hz
**Stromverbrauch:** 40 W
**Abmessungen:** 43 (B)×37,5 (T)×7,6 (H) cm
**Gewicht:** 6,1 kg

## ■ Systemtyp

**Typ:** Digital Audio Prozessor
**PCM-Norm:** Verbraucher-PCM-Ver-/Entschlüßler-Norm STC-008 (für PAL/SECAM-Format) STC-007 (für NTSC-Format) vom EIAJ stereotechnischen Ausschuß, videotechnischen Ausschuß. (Mit Aufnahmevorbetonung)
**Quantisierung:** 14 Bit, linear
**Schlüsselung:** 14 Bit, linear
**Anzahl der Audiokanäle:** 2 (L, R-Stereo)
**Frequenzgang:** 2 Hz–20 kHz (±0,5 dB)
**Totale Klirrverzerrung:** 0,01% oder weniger (1 kHz, 0 dB)
**Dynamikbereich:** 86 dB oder mehr
**Gleichlaufschwankungen:** Ausserhalb Messbarkeit

## ■ Eingangspegel und -impedanz

**Leitung:** 55 mV [bei Referenzeingangspegel (−15 dB Anzeige)]/50 kΩ
**Mikrophon:** 1,1 mV [bei Referenzeingangspegel (−15 dB Anzeige)]/600Ω
**Video:** 1 Vp-p/75Ω

## ■ Ausgangspegel und -impedanz

**Leitung:** 310 mV [bei Referenzausgangspegel (−15 dB Anzeige)]/220 Ω
**Video:** 1 Vp-p/75Ω
**Monitor:** 1 Vp-p/75Ω

Français

# CARACTERISTIQUES

Les spécifications sont susceptibles d'être modifiées sans préavis.
Le poids et les dimensions donnés sont approximatifs.

## ■ Généralités

**Alimentation:** −110/120/220/240 V, 50/60 Hz
**Consommation:** 40 W
**Dimensions:** 43 (L)×37,5 (P)×7,6 (H) cm
**Poids:** 6,1 kg

## ■ Type du système

**Type:** Processeur audio-numérique
**Norme de la modulation par impulsions codées (PCM):** En conformité avec les notations normalisées STC-008 (pour caractéristique PAL/SECAM), STC-007 (pour caractéristique NTSC) d'encodage/décodage de modulation par impulsions codées du Comité Technique Vidéo et du Comité Technique Stéréo EIAJ.
**Quantification:** 14 bits linéaires
**Codage:** 14 bits linéaires
**Nombre de canaux audio:** 2 (gauche et droite stéréophoniques)
**Réponse en fréquence:** 2 Hz–20 kHz (±0,5 dB)
**Distorsion harmonique totale:** 0,01% ou moins (1 kHz, 0 dB)
**Plage dynamique:** 86 dB ou plus
**Scintillation et pleurage:** Non mesurable (Au-dessous du seuil de mesurage)

## ■ Niveau d'entrée et impédance

**Ligne:** 55 mV [à un niveau d'entrée de référence (indication de −15 dB)]/50 kΩ.
**Microphone:** 1,1 mV [à un niveau d'entrée de référence (indication de −15 dB)]/600 Ω.
**Vidéo:** 1 V crête-à-crête/75Ω

## ■ Niveau de sortie et impédance

**Ligne:** 310 mV [à un niveau de sortie de référence (indication de −15 dB)]/220 Ω
**Vidéo:** 1 V crête-à-crête/75Ω
**Moniteur:** 1 V crête-à-crête/75Ω

Español

# ESPECIFICACIONES

Las especificaciones quedan sujetas a cambios sin aviso previo.
Los pesos y las dimensiones indicados son aproximativos.

## ■ En general

| | |
|---|---|
| **Suministro de corriente:** | –110/120/220/240 V, 50/60 Hz |
| **Consumo de corriente:** | 40 W |
| **Dimensiones:** | 43 (ancho)×37,5 (prof.)×7,6(alto) cm |
| **Peso:** | 6,1 kg |

## ■ Tipo de sistema

| | |
|---|---|
| **Tipo:** | Procesador digital de audio |
| **Normas para PCM:** | En conformidad con el archivo STC-008 (para el sistema PAL/SECAM), STC-007 (para el sistema NTSC) de las normas para codificadores/descodificadores PCM para consumidores de los comités técnicos de estéreo y de vídeo EIAJ |
| **Cuantificación:** | lineal de 14 bitios |
| **Codificación:** | lineal de 14 bitios |
| **Número de canales de audio:** | 2 (estéreos, derecho e izquierdo) |
| **Respuesta de frecuencia:** | 2 Hz–20 kHz (±0,5 dB) |
| **Distorsión armónica total:** | 0,01% o menos (1 kHz, 0 dB) |
| **Gama dinámica:** | 86 dB o más |
| **Ululaciones y trémolo:** | Inmedibles (Inferior al umbral de medición) |

## ■ Nivel e impedancia de entrada

| | |
|---|---|
| **Línea:** | 55 mV [en el nivel de entrada de referencia (marcando –15 dB)]/50 kΩ |
| **Micrófono:** | 1,1 mV [en el nivel de entrada de referencia (marcando –15 dB)]/600Ω |
| **Vídeo:** | 1 Vp-p/75Ω |

## ■ Nivel e impedancia de salida

| | |
|---|---|
| **Línea:** | 310 mV [en el nivel de salida de referencia (marcando –15 dB)]/220Ω |
| **Vídeo:** | 1 Vp-p/75Ω |
| **Monitor** | 1 Vp-p/75Ω |

# ■ MEASUREMENTS AND ADJUSTMENTS — English

## • Adjustment of display circuit

After repair of display circuit, make the adjustment as follows:

**• Instruments used and setting**

1. AC electronic voltmeter
2. 100 Hz sine-wave oscillator
3. Recording level . . . . . .max.
4. Recording balance . . . . . .center
5. Playback mode switch . . . . . .1
6. Connect 100 Hz sine-wave oscillator and AC electronic voltmeter to LINE IN.
7. Adjust the oscillator so that the input of LINE IN is 319 mV.

| Step | Item | Parts adjusted | ADjusting procedure |
|---|---|---|---|
| 1 | 0 dB | VR213 **(Fig. 8)** | • Adjust VR213 so that 0 dB (B16) of level meter on the right begins to light up. **(Fig. 9)** |
| 2 | Balance | VR211 **(Fig. 8)** | • Adjust VR211 so that 0 dB (B16) of level meter on the left begins to light up. **(Fig. 9)** |
| 3 | Recovery time | VR212 **(Fig. 8)** | • Instantaneously cut off the input of LINE IN and check the falls of right and left channels of level meter.<br>• If there is a difference between right and left channels, adjust VR212 until no difference. |

# ■ MESSUNGEN UND JUSTIERUNGEN — Deutsch

## • Justierung der Anzeigenschaltung

Nach der Reparatur der Anzeigenschaltung ist die folgende Justierung durchzuführen:

**• Zu verwendende Instrumente und Einstellungen am Gerät**

1. Elektronisches Wechselstrom-Voltmeter
2. 100 Hz-Sinuswellen-Oszillator
3. Aufnahmepegel. . . . . .Max.
4. Aufnahmebalance . . . . . .Mitte
5. Wiedergabebetriebsart-Wahlschalter. . . . . .1
6. Den 100 Hz-Sinuswellen-Oszillator und das elektronische Wechselstrom-Voltmeter an den LINE IN-Anschluß anschließen.
7. Den Oszillator so einstellen, daß die Eingangsleistung am LINE IN-Anschluß 319mV beträgt.

| Schritt | Abgleich | Zu justierende Teile | Justierung |
|---|---|---|---|
| 1 | 0 dB | VR213 **(Abb. 8)** | • VR213 so justieren, daß 0 dB (B16) des Pegelmeters rechts gerade aufleuchtet. **(Abb. 9)** |
| 2 | Balance | VR211 **(Abb. 8)** | • VR211 so justieren, daß 0 dB (B16) des Pegelmeters links gerade aufleuchtet. **(Abb. 9)** |
| 3 | Rückkehrzeit | VR212 **(Abb. 8)** | • Die Eingangsleistung an LINE IN plötzlich ausschalten und das Abfallen des linken und rechten Kanals des Pegelmeters überprüfen.<br>• Falls zwischen dem rechten und linken Kanal ein Unterschied besteht, diesen Unterschied durch Justieren von VR212 eliminieren. |

# CHANGES

## ■ REPLACEMENT PARTS LIST

**Notes:**

1. Mentioned in this parts list are only those changed in Model No. SV-110 for destination [M] area.
2. Important safety notice:
   Compornents identified by ⚠ mark have special characterstics important for safety. When replacing any of these components, use only manufacturer's specified parts.
3. NTSC stands for parts for NTSC format.
4. PAL stands for parts for PAL/SECAM format.
5. Parts without NTSC and PAL are common to both NTSC and PAL/SECAM format.
6. Ⓚ -marked parts are used for black only, while ○-marked parts are for silver type only. Black type model No. SV-110 (K)
7. Parts other than Ⓚ-and ○-marked are used for both black and silver types.
8. This replacement parts list contains the main parts changed from those of [M] area. For the detailed replacement parts list, refer to page 13, 14.
9. For resistors and capacitors, refer to the resistors and capacitors list on page 11, 12.

**Areas**

* [E] is available in Switzerland and Scandinavia.
* [EK] is available in United Kingdom.
* [EG] is available in F.R. Germany.
* [EB] is available in Belgium.
* [EH] is available in Holland.
* [EF] is available in France.
* [Ei] is available in Italy.
* [XA] is available in Southeast Asia, Oceania, Africa, Middle Near East and Central South America. ([NXA] stands for NTSC format set for [XA] area.)
* [PC] is available in European Audio Club.

| Ref. No. | Change of Part No. SV-110 [M] → SV-110 | | Part Name & Description | Per Set (Pcs.) | Remarks |
|---|---|---|---|---|---|
| **INTEGRATED CIRCUITS** | | | | | |
| IC481 | Addition | DN74LS174 or SVIHD74LS174 | D Flip Flop | 1 | PAL |
| IC482 | Addition | DN74LS174 or SVIHD74LS174 | D Flip Flop | 1 | PAL |
| IC483 | Addition | DN74LS174 or SVIHD74LS174 | D Flip Flop | 1 | PAL |
| IC485 | Addition | DN74LS125A or SVIHD74LS125 | Buffer Gate | 1 | PAL |
| IC486 | Addition | DN74LS123 | Multivibrator | 1 | PAL |
| IC487 | Addition | SVITC5081AP | Phase Comparator | 1 | PAL |
| IC488 | Addition | SVISN74LS628 | Voltage Control OSC. | 1 | PAL |
| **DIODE** | | | | | |
| D632 | LN329GP | LN329YP | PB Mute Indicator | 1 | |
| **OSCILLATOR** | | | | | |
| X401 | SVQ43U1586 | SVQ43U1586 [PC, NXA] | Crystal 15.86 MHz | 1 | NTSC |
| | | SVQ18C1575 | Crystal, 15.75 MHz | 1 | PAL |
| **TRANSFORMER** | | | | | |
| T1 | SLTF6244 | SLTF6642 | Power Source | 1 | ⚠ |
| **VARIABLE CAPACITOR** | | | | | |
| TC485 | Addition | ECVIZW50X32E | PLL Lock Adj. | 1 | PAL |
| **SWITCHES** | | | | | |
| S1 | ESB8213V | SFDSSDS3P | Power Switch | 1 | ⚠ |
| S2 | Addition | ESE37200 | Voltage Selector | 1 | ⚠ |
| **FUSES** | | | | | |
| F120 | XBA1F10NU14 | XBA2C10TR0 | T1A, 250V | 1 | ⚠ |
| F121 | Addition | XBA2C03TR0 | T300mA, 250V | 1 | ⚠ |

| Ref. No. | Change of Part No. SV-110 [M] → SV-110 | | Part Name & Description | Per Set (Pcs.) | Remarks |
|---|---|---|---|---|---|
| **RESISTORS** | | | | | |
| R481 | Addition | ERDS2TJ563 | Carbon, 1/4W, 56kΩ | 1 | PAL |
| R483 | Addition | ERDS2TJ561 | Carbon, 1/4W, 560Ω | 1 | PAL |
| R485 | Addition | ERDS2TJ103 | Carbon, 1/4W, 10kΩ | 1 | PAL |
| R486 | Addition | ERDS2TJ103 | Carbon, 1/4W, 10kΩ | 1 | PAL |
| **CAPACITORS** | | | | | |
| C1 | ECKDMY103PF | ECKDKC103PF | Ceramic, 400V, 0.01μF | 1 | ⚠ |
| C2 | Addition | ECKDKC103PF | Ceramic, 400V, 0.01μF, | 1 | ⚠ |
| C120 | ECKDAL102Z—T | ECKDHS222MD | Ceramic, 400V, 0.0022μF | 1 | ⚠ |
| C121 | Addition | ECKDHS222MD | Ceramic, 400V, 0.0022μF | 1 | ⚠ |
| C122 | ECKDAL102Z—T | ECKDHS222MD | Ceramic, 400V, 0.0022μF | 1 | ⚠ |
| C123 | Addition | ECKDHS222MD | Ceramic, 400V, 0.0022μF | 1 | ⚠ |
| C124 | ECKDMY103PF | ECKDKC103PF | Ceramic, 400V, 0.01μF | 1 | ⚠ |
| C407 | ECCD1H470K | ECCD1H470K [PC, NXA] | Ceramic, 50V, 47pF | 1 | NTSC |
| | | ECCD1H100KC | Ceramic, 50V, 10pF | 1 | PAL |
| C408 | ECCD1H470K | ECCD1H470K [PC, NXA] | Ceramic, 50V, 47pF | 1 | NTSC |
| | | ECCD1H100KC | Ceramic, 50V, 10pF | 1 | PAL |
| C481 | Addition | ECQM1H103JZ | Polyester, 50V, 0.01μF | 1 | PAL |
| C485 | Addition | ECEA1CS100S | Electrolytic, 16V, 10μF | 1 | PAL |
| C486 | Addition | ECEA1HU010 | Electrolytic, 50V, 1μF | 1 | PAL |
| C487 | Addition | ECCD1H121JZ | Ceramic, 50V, 120pF | 1 | PAL |
| C490 | Addition | ECEA0JU470 | Electrolytic, 6.3V, 47μF | 1 | PAL |
| C491 | Addition | ECKD1H103MD | Ceramic, 50V, 0.01μF | 1 | PAL |
| C492 | Addition | ECKD1H103MD | Ceramic, 50V, 0.01μF | 1 | PAL |
| **CABINET and CHASSIS PARTS** | | | | | |
| 1 | SSBP110N01E | SSBP110N01E | Front Panel (Silver) | 1 | ○ |
| | | SSBP110N11E | Front Panel (Black) | 1 | Ⓚ |
| 13 | SSUM110N01E | SSUM110N01E | Sub Panel (Silver) | 1 | ○ |
| | | SSUM110N11E | Sub Panel (Black) | 1 | Ⓚ |
| 14 | SSUP110N03 | SSUP110N03 | Cabinet (Silver) | 1 | ○ |
| | | SSUP110N13 | Cabinet (Black) | 1 | Ⓚ |
| 26 | SFDJHSC0491 | SFDJHSC0491 [XA, PC] | Jack, AC IN | 1 | ⚠ |
| | | SFDJHSC0516 [Other areas] | Jack, AC IN | 1 | ⚠ |
| 27 | SRNZ010M03 | Deletion | ---------- | 1 | |
| 28 | SSNN110M01 | SSNN110S01 [E] | Name Plate | 1 | |
| | | SSNN110P02 [PC] | Name Plate | 1 | |
| | | SSNN110X01 [XA] | Name Plate | 1 | |
| | | SSNN110G01 [EK] | Name Plate | 1 | |
| | | SSNN110R01 [Other areas] | Name Plate | 1 | |
| 34 | SJT345 | SJT347 | Holder, Fuse | 4 | |
| 37 | SSGK110N01 | SSGK110N01 | Cap (Silver) | 1 | ○ |
| | | SSGK110N11 | Cap (Black) | 1 | Ⓚ |
| 40 | Addition | SUV453 | Cover Voltage Selector | 1 | |
| **SCREW** | | | | | |
| N4 | XTB4+8BFN | XTB4+8BFN | Screw, Cabinet (Silver) | 4 | ○ |
| | | XTB4+8BFZ | Screw, Cabinet (Black) | 4 | Ⓚ |

## ■ MESURAGES ET RÉGLAGES — Français

### • Réglages du circuit de l'affichage

Après avoir réparé le circuit de l'affichage, effectuer le réglage de la manière suivante:

**• Appareils utilisés et mises au point**

1. Voltmètre électronique à C.A.
2. Oscillateur à ondes sinusoïdales de 100 Hz
3. Niveau d'enregistrement. . . . . max.
4. Equilibrage de l'enregistrement. . . . . centre
5. Commutateur de mode de lecture. . . 1
6. Raccorder l'oscillateur à ondes sinusoïdales de 100 Hz et le voltmètre électronique à C.A. à "LINE IN" (entrée de ligne).
7. Régler l'oscillateur de telle sorte que l'ENTREE DE LIGNE soit de 319 mV.

| Etape | Article | Elément à régler | Mode de réglage |
|---|---|---|---|
| 1 | 0 dB | VR213 **(Fig. 8)** | • Régler VR213 de telle sorte que 0 dB (B16) de l'indicateur de niveau sur la droite commence à s'éclairer. **(Fig. 9)** |
| 2 | Equilibrage | VR211 **(Fig. 8)** | • Régler VR211 de telle sorte que 0 dB (B16) de l'indicateur de niveau sur la gauche commence à s'éclairer. **(Fig. 9)** |
| 3 | Durée de rétablissement | VR212 **(Fig. 8)** | • Couper instantanément l'entrée de "LINE IN" (entrée de ligne) et vérifier les chutes de tension des canaux de droite et de gauche de l'indicateur de niveau.<br>• S'il y a une différence entre les canaux de droite et de gauche, régler VR212 jusqu'à ce que cette différence disparaisse. |

## ■ MEDICIONES Y AJUSTE — Español

### • Circuito de presentación

Después de la reparación del circuito de presentación, haga el ajuste como sigue:

**• Instrumentos usados y puesta**

1. Voltímetro electrónico de CA
2. Oscilador de onda sinusoidal
3. Nivel de grabación . . . . . máx.
4. Equilibrio de grabación . . . . . centro
5. Interruptor de modalidad de reproducción . . . . . 1
6. Conectar oscilador de onda sinusoidal de 100 Hz y voltímetro electrónico de CA a "LINE IN" (entrada de línea).
7. Ajustar el oscilador de manera que la entrada de "LINE IN" sea 319 mV.

| Paso | Item | Piezas ajustadas | Procedimiento de adjuste |
|---|---|---|---|
| 1 | 0 dB | VR213 **(Fig. 8)** | • Ajustar VR213 de manera que 0 dB (B16) de medidor de nivel de la derecha comience a iluminarse. **(Fig. 9)** |
| 2 | Equilibrio | VR211 **(Fig. 8)** | • Ajustar VR211 de manera que 0 dB (B16) de medidor de nivel de la izquierda comience a iluminarse. **(Fig. 9)** |
| 3 | Tiempo de | VR212 **(Fig. 8)** | • Instantáneamente interrumpir la entrada de "LINE IN" y comprobar las caídas de los canales derecho e izquierdo del medidor de nivel.<br>• Si hay una diferencia entre los canales derecho e izquierdo, ajustar VR212 hasta que no haya diferencia. |



## ■ ADJUSTMENT POINTS

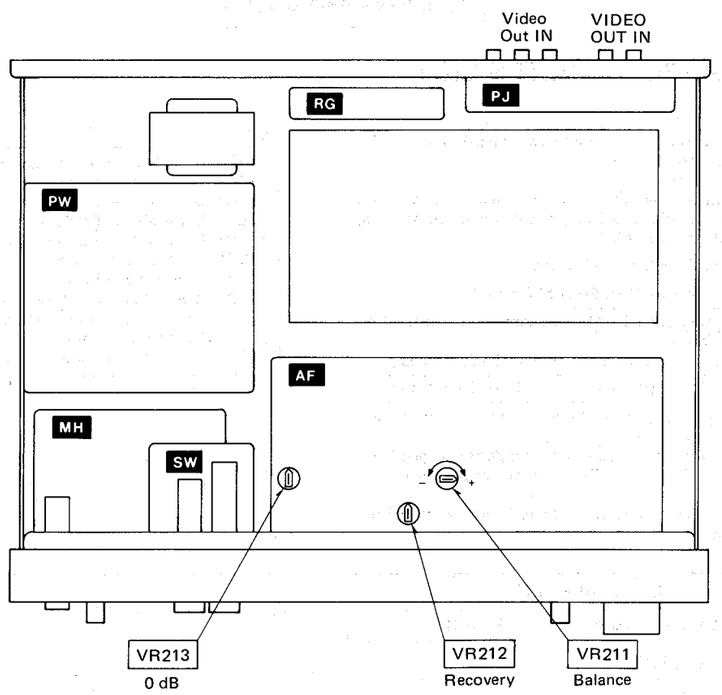



**Fig. 8**
**(Abb. 9)**

### • Display

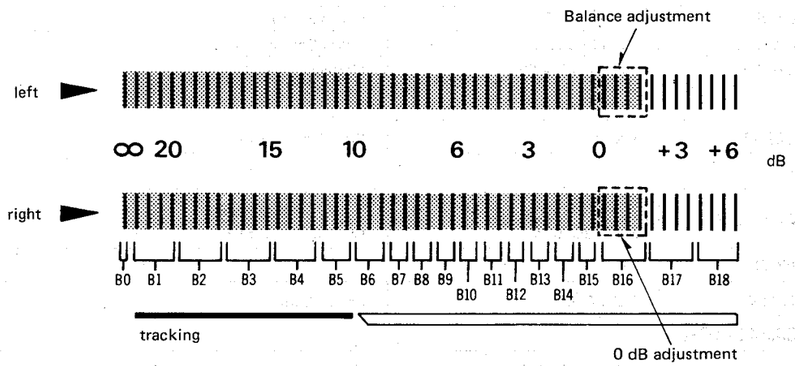
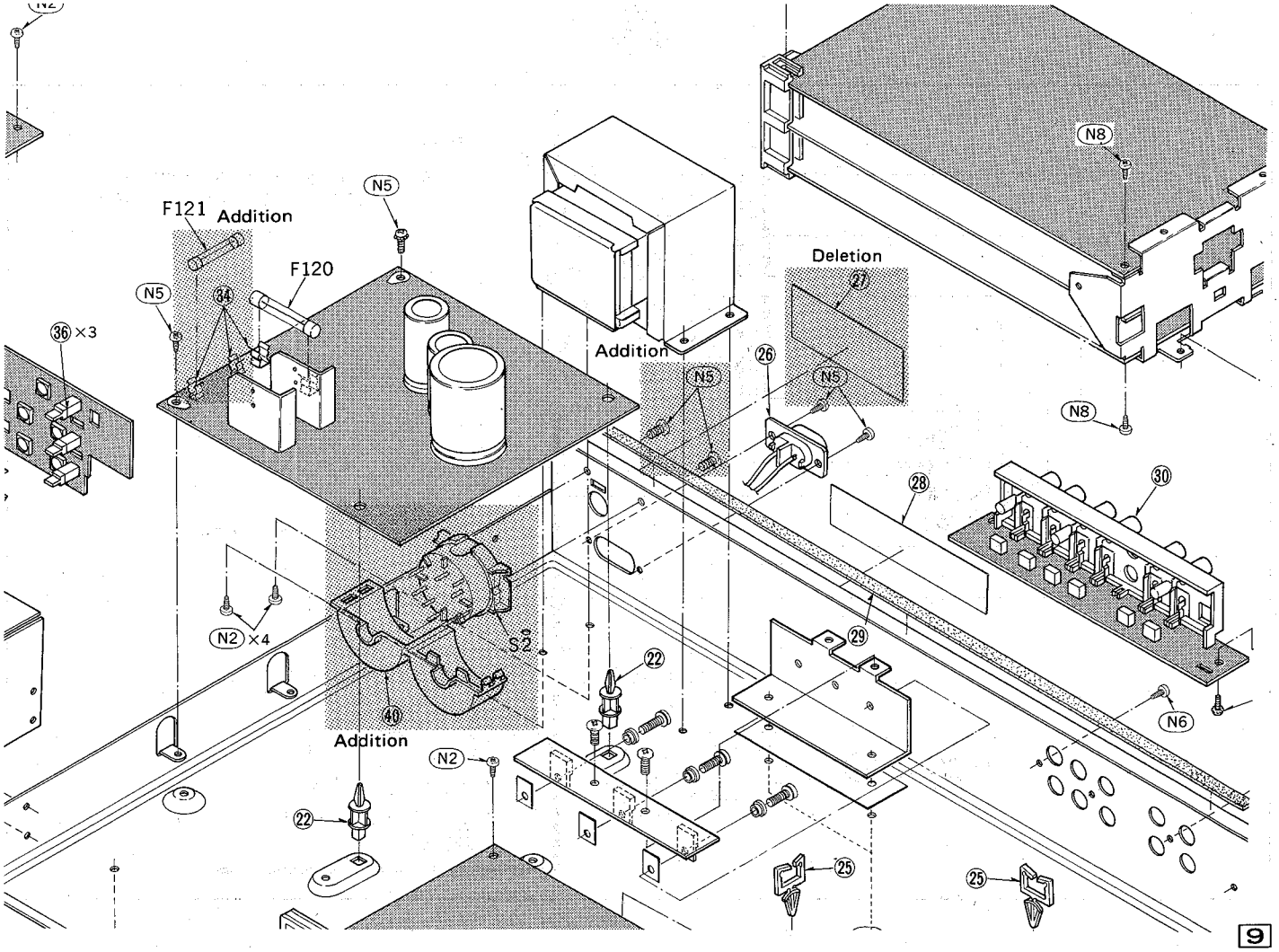

Balance adjustment
left
right
∞ 20 15 10 6 3 0 +3 +6 dB
B0 B1 B2 B3 B4 B5 B6 B7 B8 B9 B10 B11 B12 B13 B14 B15 B16 B17 B18
tracking
0 dB adjustment

**Fig. 9**
**(Abb. 9)**

| Ref. No. | Change of Part No. SV-110 [M] → SV-110 | | | Part Name & Description | Per Set (Pcs.) | Remarks |
|---|---|---|---|---|---|---|
| **ACCESSORIES** | | | | | | |
| A1 | SSNU110M01 | SSNU110G01 | [EK] | Instruction Book | 1 | |
| | | SSNU110I01 | [Ei] | Instruction Book | 1 | |
| | | SSNU110X01 | [EG, EF, XA] | Instruction Book | 1 | |
| | | SSNU110P01 | [PC] | Instruction Book | 1 | |
| | | SSNU110S01E | [Other areas] | Instruction Book | 1 | |
| A2 | SFDAC05M01 | SFDAC05G02 | [EK] | AC Cord | 1 | ⚠ |
| | | SFDAC05X02 | [XA] | AC Cord | 1 | ⚠ |
| | | SFDAC05N01 | [PC] | AC Cord | 1 | ⚠ |
| | | SFDAC05E02 | [Other areas] | AC Cord | 1 | ⚠ |
| A6 | Addition | ---------- | [PC, NXA] | ---------- | 0 | NTSC |
| | | SSDK101S01 | | BNC Adaptor | 2 | PAL |
| A7 | Addition | SFDKI19118 | [XA] only | 2 Pin-Plug | 1 | ⚠ |
| A8 | Addition | QJP0603S | [PC] only | Adaptor, Gimens | 1 | ⚠ |
| **PACKING PARTS** | | | | | | |
| P1 | SSHP110M01 | SSHP110C01 | [EF] only | Carton Box (Silver) | 1 | ○ |
| | | SSHP110M01 | [Other areas] | Carton Box (Silver) | 1 | ○ |
| | | SSHP110C11 | [EF] only | Carton Box (Black) | 1 | Ⓚ |
| | | SSHP110M11 | [Other areas] | Carton Box (Black) | 1 | Ⓚ |

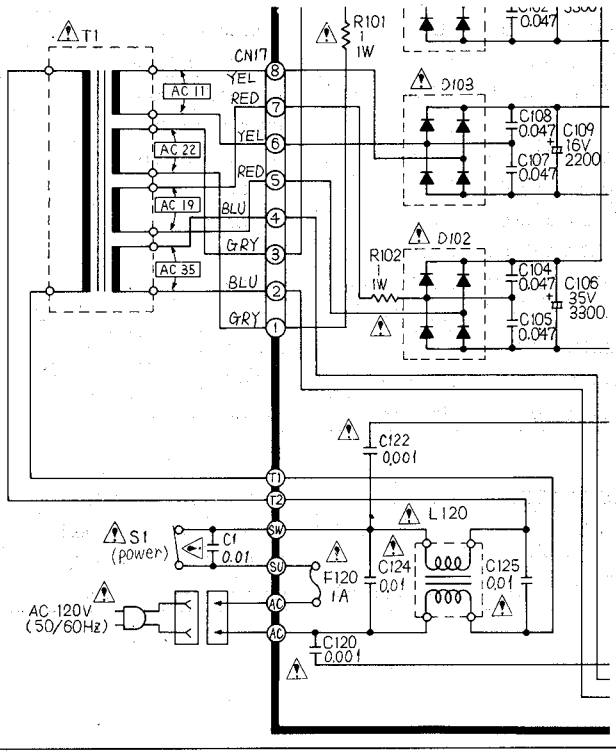
## ■ EXPLODED VIEW

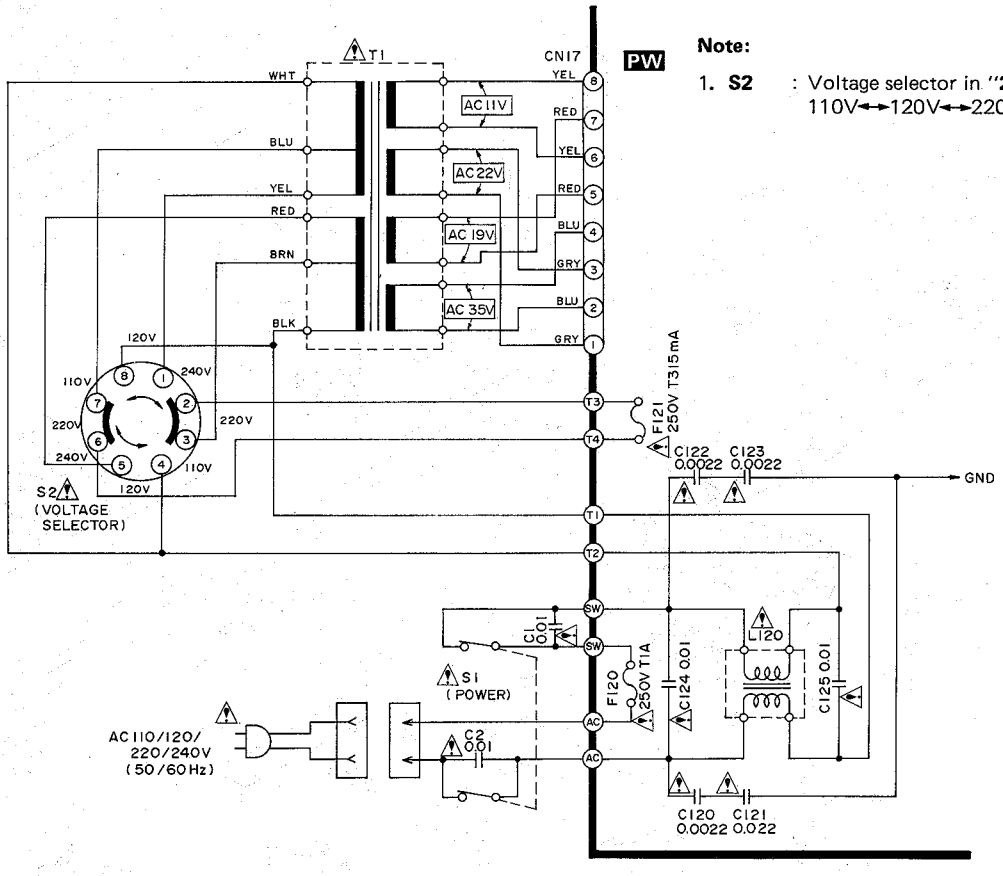


## ■ SCHEMATIC DIAGRAM

- **Power source circuit**

**※ Product for U.S.A.**




**Note:**

1. **S2** : Voltage selector in "**220V**" position.
   110V↔120V↔220V↔240V

# ■ RESISTORS AND CAPACITORS

**Notes:**
1. Part numbers are indicated on most mechanical parts. Please use this part number for parts orders.
2. Important safety notice: Components identified by ⚠ mark have special characteristics important for safety. When replacing any of these components use only manufacturer's specified parts.
3. NTSC stands for parts for NTSC format.
4. PAL stands for parts for PAL/SECAM format.
5. Parts without NTSC and PAL are common to both NTSC and PAL/SECAM format.
6. The "Ⓢ" mark is service standard parts and may differ from production parts.
7. The unit of resistance is (ohm). K = 1000 M = 1000K
8. The unit capacitance is μF (microfarad) P = $10^{-6}$ μF

## Numbering System of Resistor

Example

| ERD | 25 | F | J | 101 |
|---|---|---|---|---|
| Type | Wattage | Shape | Tolerance | Value |

| ERX | 2 | AN | J | 2R2 |
|---|---|---|---|---|
| Type | Wattage | Shape | Tolerance | Value |

| Resistor Type | | Wattage | | Tolerance | |
|---|---|---|---|---|---|
| ERD | : Carbon | 25 | : 1/4W | G | : ± 2% |
| ERG | : Metal Oxide | 1 | : 1W | J | : ± 5% |
| ERO | : Metal Film | S2 | : 1/4W | K | : ± 10% |
| ERQ | : Fuse | | | | |

## Numbering System of Capacitor

Example

| ECKD | 1H | 102 | Z | F |
|---|---|---|---|---|
| Type | Voltage | Value | Tolerance | Peculiarity |

| ECEA | 50 | M | R47 | R |
|---|---|---|---|---|
| Type | Voltage | Reculiarity use | Value | Special use |

| Capacitor Type | | Voltage | | Tolerance | |
|---|---|---|---|---|---|
| ECEA | : Electrolytic | OJ | : 6.3V | C | : ± 0.25pF |
| ECEB | : Electrolytic | 1A | : 16V | G | : ± 2% |
| ECEA...N | : Non Polar Electrolytic | 1C | : 16V | J | : ± 5% |
| ECCD | : Ceramic | 1E | : 25V | K | : ± 10% |
| ECCR | : Ceramic | 25 | : 25V | M | : ± 20% |
| ECKD | : Ceramic | 1V | : 35V | P | : +100%, −0% |
| ECQM | : Polyester | 1H | : 50V | Z | : +80%, −20% |
| ECQP | : Polypropylene | KC | : 400V | | |
| ECES | : Electrolytic | | | | |

## ● RESISTORS

| Ref. No. | Part No. | Value |
|---|---|---|
| R101,102 ⚠ | ERQ1CJ1R0 | 1 |
| R104 | ERDS2TJ103 | 10K |
| R105 | ERDS2TJ152 | 1.5K |
| R106 | ERDS2TJ103 | 10K |
| R107,108 | ERDS2TJ221 | 220 |
| R109,110 | ERDS2TJ103 | 10K |
| R111 Ⓢ | ERGIANJ221 | 220 |
| R112,113 | ERDS2TJ681 | 680 |
| R114 | ERDS2TJ103 | 10K |
| R130 | ERDS2TJ100 | 10 |
| R131 | ERDS2TJ221 | 220 |
| R149,150 | ERDS2TJ474 | 470K |
| R151,152 | ERDS2TJ104 | 100K |
| R153,154 | ER0S2TKG3902 | 39K |
| R155,156 | ER0S2TKG3601 | 3.6K |
| R157,158 | ER0S2TKG1102 | 11K |
| R159,160 | ER0S2TKG2701 | 2.7K |
| R161,162 | ER0S2TKG2701 | 2.7K |
| R163,164 | ER0S2TKG2401 | 2.4K |
| R165,166 | ER0S2TKG2401 | 2.4K |
| R167,168 | ER0S2TKG3902 | 39K |
| R169,170 | ER0S2TKG1802 | 18K |
| R171,172 | ER0S2TKG1602 | 16K |
| R173,174 | ER0S2TKG3601 | 3.6K |
| R175,176 | ERDS2TJ333 | 33K |
| R177 | ERDS2TJ102 | 1K |
| R178 | ERDS2TJ472 | 4.7K |
| R185 | ERDS2TJ472 | 4.7K |
| R186 | ERDS2TJ471 | 470 |
| R187 | ERDS2TJ561 | 560 |
| R188,189 | ERDS2TJ103 | 10K |
| R190 | ERDS2TJ271 | 270 |
| R191 | ERDS2TJ472 | 4.7K |
| R192,193 | ERDS2TJ103 | 10K |
| R195 | ERDS2TJ103 | 10K |
| R196 | ERDS2TJ472 | 4.7K |
| R197 | ERDS2TJ332 | 3.3K |
| R198 | ERDS2TJ471 | 470 |
| R199 | ERDS2TJ472 | 4.7K |
| R200 | ERDS2TJ102 | 1K |
| R201 | ERDS2TJ472 | 4.7K |
| R202 | ERDS2TJ102 | 1K |
| R203 | ERDS2TJ472 | 4.7K |
| R204 | ERDS2TJ102 | 1K |
| R205 | ERDS2TJ102 | 1K |
| R206,207 | ERDS2TJ271 | 270 |
| R208 | ERDS2TJ102 | 1K |
| R209 | ERDS2TJ472 | 4.7K |
| R210 | ERDS2TJ103 | 10K |
| R211,212 | ER0S2TKG5102 | 51K |
| R213 | ERDS2TJ333 | 33K |
| R214 | ER0S2TKG3902 | 39K |
| R215,216 | ERDS2TJ472 | 4.7K |
| R217 | ERDS2TJ104 | 100K |
| R218 | ERDS2TJ474 | 470K |
| R219,220 | ERDS2TJ433 | 43K |
| R221,222 | ERDS2TJ682 | 6.8K |
| R223,224 | ERDS2TJ473 | 47K |
| R225 | ERDS2TJ473 | 47K |
| R226,227 | ERDS2TJ223 | 22K |
| R228,229 | ERDS2TJ472 | 4.7K |
| R230 | ERDS2TJ472 | 4.7K |
| R231 | ERDS2TJ474 | 470K |
| R232 | ERDS2TJ123 | 12K |
| R233 | ERDS2TJ472 | 4.7K |
| R234 | ERDS2TJ474 | 470K |
| R235 | ERDS2TJ103 | 10K |
| R236 | ERDS2TJ472 | 4.7K |
| R237 | ERDS2TJ104 | 100K |
| R238 | ERDS2TJ472 | 4.7K |
| R239 | ERDS2TJ104 | 100K |
| R241 | ERDS2TJ104 | 100K |
| R242 | ERDS2TJ473 | 47K |
| R253 | ERDS2TJ103 | 10K |
| R255,256 | ERDS2TJ561 | 560 |
| R257,258 | ERDS2TJ473 | 47K |
| R259,260 | ERDS2TJ221 | 220 |
| R261,262 | ERDS2TJ332 | 3.3K |
| R263,264 | ERDS2TJ332 | 3.3K |
| R265,266 | ERDS2TJ332 | 3.3K |
| R267,268 | ERDS2TJ223 | 22K |
| R269,270 | ERDS2TJ221 | 220 |
| R271,272 | ERDS2TJ103 | 10K |
| R273,274 | ERDS2TJ104 | 100K |
| R275 | ERDS2TJ102 | 1K |
| R276 | ERDS2TJ561 | 560 |
| R281,282 | ERDS2TJ104 | 100K |
| R283,284 | ERDS2TJ123 | 12K |
| R285,286 | ERDS2TJ123 | 12K |
| R287,288 | ERDS2TJ223 | 22K |
| R289,290 | ERDS2TJ223 | 22K |
| R291,292 | ERDS2TJ820 | 82 |
| R293,294 | ERDS2TJ820 | 82 |
| R301 | ERDS2TJ820 | 82 |
| R302 | ERDS2TJ472 | 4.7K |
| R303 | ERDS2TJ223 | 22K |
| R304 | ERDS2TJ472 | 4.7K |
| R305 | ERDS2TJ222 | 2.2K |
| R306 | ERDS2TJ272 | 2.7K |
| R307 | ERDS2TJ102 | 1K |
| R308 | ERDS2TJ102 | 1K |
| R309 | ERDS2TJ472 | 4.7K |
| R310 | ERDS2TJ472 | 4.7K |
| R311 | ERDS2TJ393 | 39K |
| R312 | ERDS2TJ472 | 4.7K |
| R313 | ERDS2TJ122 | 1.2K |
| R314 | ERDS2TJ272 | 2.7K |
| R315 | ERDS2TJ183 | 18K |
| R316 | ERDS2TJ472 | 4.7K |
| R317 | ERDS2TJ153 | 15K |
| R318 | ERDS2TJ680 | 68 |
| R319 | ERDS2TJ472 | 4.7K |
| R320 | ERDS2TJ153 | 15K |
| R321 | ERDS2TJ472 | 4.7K |
| R322 | ERDS2TJ822 | 8.2K |
| R323 | ERDS2TJ682 | 6.8K |
| R324 | ERDS2TJ153 | 15K |
| R325 | ERDS2TJ223 | 22K |
| R326 | ERDS2TJ472 | 4.7K |
| R327 | ERDS2TJ472 | 4.7K |
| R328 | ERDS2TJ223 | 22K |
| R329 | ERDS2TJ153 | 15K |
| R330 | ERDS2TJ153 | 15K |
| R331 | ERDS2TJ102 | 1K |
| R332 | ERDS2TJ102 | 1K |
| R333 | ERDS2TJ273 | 27K |
| R334 | ERDS2TJ822 | 8.2K |
| R335 | ERDS2TJ392 | 3.9K |
| R336 | ERDS2TJ272 | 2.7K |

| Ref. No. | Part No. | Value |
|---|---|---|
| R337 | ERDS2TJ102 | 1K |
| R338 | ERDS2TJ102 | 1K |
| R339 | ERDS2TJ102 | 1K |
| R340 | ERDS2TJ102 | 1K |
| R341 | ERDS2TJ103 | 10K |
| R342 | ERDS2TJ103 | 10K |
| R343 | ERDS2TJ102 | 1K |
| R344 | ERDS2TJ153 | 15K |
| R345 | ERDS2TJ153 | 15K |
| R346 | ERDS2TJ123 | 12K |
| R347 | ERDS2TJ103 | 10K |
| R349 | ERDS2TJ102 | 1K |
| R350 | ERDS2TJ473 | 47K |
| R353 | ERDS2TJ153 | 15K |
| R354 | ERDS2TJ103 | 10K |
| R355 | ERDS2TJ103 | 10K |
| R356 | ERDS2TJ122 | 1.2K |
| R357 | ERDS2TJ102 | 1K |
| R358 | ERDS2TJ122 | 1.2K |
| R359 | ERDS2TJ152 | 1.5K |
| R360 | ERDS2TJ153 | 15K |
| R361 | ERDS2TJ104 | 100K |
| R362 | ERDS2TJ123 | 12K |
| R363 | ERDS2TJ103 | 10K |
| R364 | ERDS2TJ103 | 10K |
| R365 | ERDS2TJ103 | 10K |
| R366 | ERDS2TJ103 | 10K |
| R367 | ER0S2TKG1002 | 10K |
| R368 | ER0S2TKG1002 | 10K |
| R369 | ER0S2TKG1002 | 10K |
| R370 | ER0S2TKG1002 | 10K |
| R371 | ERDS2TJ221 | 220 |
| R372 | ERDS2TJ221 | 220 |
| R373 | ER0S2TKG1002 | 10K |

| Ref. No. | Part No. | Value |
|---|---|---|
| R374 | ER0S2TKG1002 | 10K |
| R375 | ER0S2TKG1002 | 10K |
| R376 | ER0S2TKG1002 | 10K |
| R377 | ER0S2TKG2002 | 20K |
| R378 | ER0S2TKG2002 | 20K |
| R379 | ER0S2TKG2401 | 2.4K |
| R380 | ER0S2TKG2401 | 2.4K |
| R381 | ER0S2TKG1302 | 13K |
| R382 | ER0S2TKG1302 | 13K |
| R383 | ER0S2TKG1302 | 13K |
| R384 | ER0S2TKG1302 | 13K |
| R385 | ER0S2TKG5101 | 5.1K |
| R386 | ER0S2TKG5101 | 5.1K |
| R387 | ERDS2TJ221 | 220 |
| R388 | ERDS2TJ332 | 3.3K |
| R389 | ERDS2TJ332 | 3.3K |
| R390 | ERDS2TJ102 | 1K |
| R391 | ERDS2TJ332 | 3.3K |
| R392 | ERDS2TJ332 | 3.3K |
| R393 | ERDS2TJ472 | 4.7K |
| R394 | ERDS2TJ473 | 47K |
| R395 | ERDS2TJ472 | 4.7K |
| R396 | ERDS2TJ221 | 220 |
| R397 | ERDS2TJ103 | 10K |
| R398 | ERDS2TJ472 | 4.7K |
| R399 | ERDS2TJ472 | 4.7K |
| R401 Ⓢ | ERD25FJ102 | 1K |
| R402 Ⓢ | ERD25FJ102 | 1K |
| R403 Ⓢ | ERD25TJ333 | 33K |
| R404 Ⓢ | ERD25TJ333 | 33K |
| R405 Ⓢ | ERD25TJ224 | 220K |
| R408 Ⓢ | ERD25FJ103 | 10K |
| **R481** PAL | ERDS2TJ563 | 56K |
| **R483** PAL | ERDS2TJ561 | 560 |
| **R485** PAL | ERDS2TJ103 | 10K |
| **R486** PAL | ERDS2TJ103 | 10K |

| Ref. No. | Part No. | Value |
|---|---|---|
| R501 | ERDS2TJ393 | 39K |
| R502 | ERDS2TJ393 | 39K |
| R503 | ERDS2TJ223 | 22K |
| R504 | ERDS2TJ103 | 10K |
| R505 | ERDS2TJ182 | 1.8K |
| R506 | ERDS2TJ473 | 47K |
| R507 | ERDS2TJ102 | 1K |
| R508 | ERDS2TJ102 | 1K |
| R509 | ERDS2TJ102 | 1K |
| R510 | ERDS2TJ223 | 22K |
| R511 | ERDS2TJ223 | 22K |
| R512 | ERDS2TJ103 | 10K |
| R513 | ERDS2TJ103 | 10K |
| R514 | ERDS2TJ123 | 12K |
| R515 | ERDS2TJ223 | 22K |
| R516 | ERDS2TJ102 | 1K |
| R517 | ERDS2TJ562 | 5.6K |
| R520 | ERDS2TJ473 | 47K |
| R521 | ER0S2TKG4640 | 464 |
| R522 | ER0S2TKG2800 | 280 |
| R523 | ER0S2TKG6340 | 634 |
| R524 | ER0S2TKG1101 | 1.1K |
| R525 | ER0S2TKG1000 | 100 |
| R526 | ER0S2TKG2431 | 2.43K |
| R527 | ERDS2TJ102 | 1K |
| R528 | ERDS2TJ121 | 120 |
| R529 | ERDS2TJ121 | 120 |
| R530 | ERDS2TJ121 | 120 |
| R531 | ERDS2TJ121 | 120 |
| R532 | ERDS2TJ104 | 100K |
| R533 | ERDS2TJ104 | 100K |
| R534 | ERDS2TJ102 | 1K |
| R537 | ERDS2TJ472 | 4.7K |
| R538 | ERDS2TJ472 | 4.7K |
| R541 | ERDS2TJ222 | 2.2K |
| R542 | ERDS2TJ123 | 12K |
| R543 | ERDS2TJ102 | 1K |

| Ref. No. | Part No. | Value |
|---|---|---|
| R545 | ERDS2TJ105 | 1M |
| R546 | ERDS2TJ470 | 47 |
| R547 | ERDS2TJ332 | 3.3K |
| R548 | ERDS2TJ563 | 56K |
| R549 | ERDS2TJ332 | 3.3K |
| R550 | ERDS2TJ563 | 56K |
| R551 | ERDS2TJ332 | 3.3K |
| R552 | ERDS2TJ563 | 56K |
| R553 | ERDS2TJ103 | 10K |
| R554 | ERDS2TJ473 | 47K |
| R555 | ERDS2TJ472 | 4.7K |
| R557 | ERDS2TJ154 | 150K |
| R561 | ERDS2TJ472 | 4.7K |
| R562 | ERDS2TJ561 | 560 |
| R563 | ERDS2TJ103 | 10K |
| R564 | ERDS2TJ473 | 47K |
| R565 | ERDS2TJ473 | 47K |
| R601,602 | ERDS2TJ221 | 220 |
| R631,632 | ERDS2TJ472 | 4.7K |
| R633,634 | ERDS2TJ472 | 4.7K |
| R635 | ERDS2TJ472 | 4.7K |
| R636 | ERDS2TJ681 | 680 |
| R637 | ERDS2TJ471 | 470 |
| R638 | ERDS2TJ681 | 680 |

## ● CAPACITORS

| Ref. No. | Part No. | Value |
|---|---|---|
| C1,2 ⚠ | ECKDKC103PF | 0.01 |
| C101,102 Ⓢ | ECKD1H473ZF | 0.047 |
| C103 Ⓢ | ECEA1VU332 | 3300 |
| C104,105 Ⓢ | ECKD1H473ZF | 0.047 |
| C106 Ⓢ | ECEA1VU332 | 3300 |
| C107,108 Ⓢ | ECKD1H473ZF | 0.047 |
| C109 | ECES1CV223Y | 22000 |
| C110 Ⓢ | ECEA1CU331B | 330 |
| C111 Ⓢ | ECEA1EU221 | 220 |
| C112 Ⓢ | ECEA1CU331B | 330 |
| C113 Ⓢ | ECEA0JU101 | 100 |
| C114 Ⓢ | ECEA0JU102 | 1000 |
| C120～123 ⚠ | ECKDHS222MD | 0.0022 |
| C124,125 ⚠ | ECKDKC103PF | 0.01 |
| C128 Ⓢ | ECKD1H473ZF | 0.047 |
| C130,131 Ⓢ | ECEA1HUR47 | 0.47 |
| C132 Ⓢ | ECEA1HUR47 | 0.47 |
| C151,152 ⚠Ⓢ | ECEA1CN100S | 10 |
| C153,154 | ECQP1392GZ | 0.0039 |
| C155,156 Ⓢ | ECCD1H331K | 330P |
| C157,158 Ⓢ | ECQM1H104JZ | 0.1 |
| C159,160 | ECQP1122GZ | 0.0012 |
| C161,162 Ⓢ | ECCD1H470K | 47P |
| C163,164 | ECQP1392GZ | 0.0039 |
| C165,166 ⚠Ⓢ | ECEA1CN100S | 10 |
| C171,172 Ⓢ | ECEA1CU331B | 330 |
| C173,174 Ⓢ | ECEA1HU3R3 | 3.3 |
| C193 Ⓢ | ECEA0JU470 | 47 |
| C194 Ⓢ | ECEA0JU471 | 470 |
| C195,196 Ⓢ | ECKD1H103MD | 0.01 |
| C197,198 Ⓢ | ECKD1H103MD | 0.01 |
| C199 Ⓢ | ECEA1AU220 | 22 |
| C211,212 ⚠Ⓢ | ECEA1HN2R2S | 2.2 |
| C213,214 Ⓢ | ECEA25M10R | 10 |
| C215 Ⓢ | ECEA1HU010 | 1 |
| C216 Ⓢ | ECEA1CU470 | 47 |
| C217 Ⓢ | ECQM1H473JZ | 0.047 |
| C218 | ECEA1EU101 | 100 |
| C255,256 ⚠Ⓢ | ECEA1CN100S | 10 |
| C257,258 Ⓢ | ECCD1H101K | 100P |
| C259,260 Ⓢ | ECKD1H103MD | 0.01 |

| Ref. No. | Part No. | Value |
|---|---|---|
| C261,262 Ⓢ | ECEA0JU101 | 100 |
| C263,264 Ⓢ | ECCD1H101K | 100P |
| C265,266 ⚠Ⓢ | ECEA1CN100S | 10 |
| C267 Ⓢ | ECEA1CU331B | 330 |
| C268,269 Ⓢ | ECEA1CU221 | 220 |
| C270 Ⓢ | ECEA1CU221 | 220 |
| C281,282 Ⓢ | ECCD1H101K | 100P |
| C283,284 Ⓢ | ECCD1H101K | 100P |
| C285,286 ⚠Ⓢ | ECEA1HN010S | 1 |
| C287 ⚠Ⓢ | ECEA1CN100S | 10 |
| C301 Ⓢ | ECEA1CU220 | 22 |
| C302 Ⓢ | ECEA1CU220 | 22 |
| C303 Ⓢ | ECEA1CU220 | 22 |
| C304 Ⓢ | ECCD1H470K | 47P |
| C305 Ⓢ | ECEA1HU2R2 | 2.2 |
| C306 Ⓢ | ECCD1H181K | 180P |
| C307 Ⓢ | ECQM1H122JZ | 0.0012 |
| C308 Ⓢ | ECCD1H561K | 560P |
| C309 Ⓢ | ECCD1H101K | 100P |
| C310 ⚠Ⓢ | ECEA1HN010S | 1 |
| C312 Ⓢ | ECQM1H332JZ | 0.0033 |
| C313 Ⓢ | ECEA0JU330 | 33 |
| C314 Ⓢ | ECEA1EU4R7 | 4.7 |
| C320 Ⓢ | ECQM1H103JZ | 0.01 |
| C321 Ⓢ | ECKD1H473ZF | 0.047 |
| C322 Ⓢ | ECKD1H473ZF | 0.047 |
| C324 Ⓢ | ECKD1H473ZF | 0.047 |
| C325 Ⓢ | ECKD1H473ZF | 0.047 |
| C336 | ECCD1H681J | 680P |
| C364 Ⓢ | ECCD1H101K | 100P |
| C365 ⚠Ⓢ | ECEA1CN101S | 100 |
| C366 ⚠Ⓢ | ECEA1CN101S | 100 |
| C367 Ⓢ | ECCD1H471K | 470P |
| C368 Ⓢ | ECCD1H471K | 470P |
| C369 Ⓢ | ECCD1H151K | 150P |
| C370 Ⓢ | ECCD1H151K | 150P |
| C371 | ECQP1102GZ | 0.001 |
| C372 | ECQP1102GZ | 0.001 |
| C373 Ⓢ | ECCD1H471K | 470P |
| C374 Ⓢ | ECCD1H471K | 470P |
| C375 Ⓢ | ECCD1H820K | 82P |
| C376 Ⓢ | ECCD1H820K | 82P |
| C377 | ECQP1392GZ | 0.0039 |
| C378 | ECQP1392GZ | 0.0039 |

| Ref. No. | Part No. | Value |
|---|---|---|
| C379 Ⓢ | ECCD1H220K | 22P |
| C380 Ⓢ | ECEA1CU101 | 100 |
| C381 Ⓢ | ECEA1CU101 | 100 |
| C382 Ⓢ | ECEA0JU331 | 330 |
| C383 Ⓢ | ECEA1AU221 | 220 |
| C384 Ⓢ | ECEA0JU331 | 330 |
| C385 Ⓢ | ECKD1H473ZF | 0.047 |
| C388 Ⓢ | ECEA1EU470 | 47 |
| C389 Ⓢ | ECEA1EU470 | 47 |
| **C390** NTSC Ⓢ | ECEA0JU331 | 330 |
| **C391** NTSC Ⓢ | ECEA0JU331 | 330 |
| C401 Ⓢ | ECKD1H473ZF | 0.047 |
| C402 Ⓢ | ECKD1H102KB | 0.001 |
| C403 Ⓢ | ECKD1H102KB | 0.001 |
| C404 Ⓢ | ECKD1H473ZF | 0.047 |
| C405 Ⓢ | ECKD1H473ZF | 0.047 |
| C406 Ⓢ | ECKD1H473ZF | 0.047 |
| **C407** NTSC Ⓢ | ECCD1H470K | 47P |
| **C407** PAL Ⓢ | ECCD1H100KC | 10P |
| **C408** NTSC Ⓢ | ECCD1H470K | 47P |
| **C408** PAL Ⓢ | ECCD1H100KC | 10P |
| C409 Ⓢ | ECKD1H473ZF | 0.047 |
| C410 Ⓢ | ECKD1H473ZF | 0.047 |
| C411 Ⓢ | ECKD1H473ZF | 0.047 |
| C412 Ⓢ | ECEB0JS102 | 1000 |
| C414 Ⓢ | ECCD1H391J | 390P |
| **C481** PAL Ⓢ | ECQM1H103JZ | 0.01 |
| **C485** PAL ⚠ | ECEA1CN100S | 10 |
| **C486** PAL Ⓢ | ECEA1HU010 | 1 |
| **C487** PAL Ⓢ | ECCD1H121JZ | 120P |
| **C490** PAL Ⓢ | ECEA0JU470 | 47 |
| **C491** PAL Ⓢ | ECKD1H103MD | 0.01 |
| **C492** PAL Ⓢ | ECKD1H103MD | 0.01 |
| C501 Ⓢ | ECQM1H103JZ | 0.01 |
| C502 Ⓢ | ECEA1EU3R3 | 3.3 |
| C503 Ⓢ | ECQM1H102JZ | 0.001 |
| C504 Ⓢ | ECQM1H102JZ | 0.001 |
| C505 Ⓢ | ECQM1H103JZ | 0.01 |
| C506 Ⓢ | ECCD1H101K | 100P |
| C507 Ⓢ | ECCD1H101K | 100P |
| C508 Ⓢ | ECQM1H104JZ | 0.1 |

| Ref. No. | Part No. | Value |
|---|---|---|
| C509 Ⓢ | ECQM1H104JZ | 0.1 |
| C510 Ⓢ | ECQM1H104JZ | 0.1 |
| C511 Ⓢ | ECQM1H104JZ | 0.1 |
| C514 Ⓢ | ECKD1H473ZF | 0.047 |
| C515 Ⓢ | ECEA0JU101 | 100 |
| C516 Ⓢ | ECEA0JU471 | 470 |
| C517 Ⓢ | ECKD1H473ZF | 0.047 |
| C518 Ⓢ | ECEA0JU471 | 470 |
| C519 Ⓢ | ECKD1H473ZF | 0.047 |
| C520 Ⓢ | ECEA1HU010 | 1 |
| C523 Ⓢ | ECKD1H473ZF | 0.047 |
| C524 Ⓢ | ECEA0JU221 | 220 |
| C525 Ⓢ | ECKD1H473ZF | 0.047 |
| C526 Ⓢ | ECKD1H473ZF | 0.047 |
| C527,528 Ⓢ | ECKD1H473ZF | 0.047 |
| C531 Ⓢ | ECEA0JU471 | 470 |
| C532 Ⓢ | ECEA0JU471 | 470 |
| C541 Ⓢ | ECQM1H103JZ | 0.01 |
| C542 Ⓢ | ECEA1CU100 | 10 |
| C543 Ⓢ | ECKD1H104ZF | 0.1 |
| C544 Ⓢ | ECKD1H104ZF | 0.1 |
| C546 Ⓢ | ECCD1H680K | 68P |
| C547 Ⓢ | ECCD1H070CC | 7P |
| C548 Ⓢ | ECCD1H070CC | 7P |
| C549 Ⓢ | ECCD1H070CC | 7P |
| C550 Ⓢ | ECCD1H070CC | 7P |
| C551 Ⓢ | ECQM1H102JZ | 0.001 |
| C552 Ⓢ | ECQM1H272JZ | 0.0027 |
| C554 Ⓢ | ECEA1CU100 | 10 |
| C555 Ⓢ | ECQM1H223JZ | 0.022 |
| C557 | ECQP1123JZ | 0.012 |
| C601,602 ⚠Ⓢ | ECEA1CN100S | 10 |
| C603,604 Ⓢ | ECQM1H332JZ | 0.0033 |
| C641 ⚠Ⓢ | ECEA1CN100S | 10 |

# ■ REPLACEMENT PARTS LIST

**Notes:**

1. Part numbers are indicated on most mechanical parts. Please use this part number for parts orders.
2. Important safety notice: Compornents identified by ⚠ mark have special characterstics important for safety. When replacing any of these components, use only manufacturer's specified parts.
3. Bracketed indications in Ref. No. columns specify the area. Parts without these indications can be used for all areas.
4. [NTSC] stands for parts for NTSC format.
5. [PAL] stands for parts for PAL/SECAM format.
6. Parts without [NTSC] and [PAL] are common to both NTSC and PAL/SECAM format.
7. The "Ⓢ" mark is service standard parts and may differ from production parts.
8. The parenthesized numbers in the columns of description stand for the quantity per set.
9. Ⓚ-marked parts are used for black only, while ○-marked parts are for silver type only.
10. Parts other than Ⓚ-and ○-marked are used for both black and silver types.

[Black the model No. SV-110 (K)]

**Areas**

* [E] is available in Switzerland and Scandinavia.
* [EK] is available in United Kingdom.
* [EG] is available in F.R. Germany.
* [EB] is available in Belgium.
* [EH] is available in Holland.
* [EF] is available in France.
* [Ei] is available in Italy.
* [XA] is available in Southeast Asia, Oceania, Africa, Middle Near East and Central South America.
* [PC] is available in European Audio Club.

**Notes:**

* Sets for [PC] area are of NTSC format.
* Set for [XA] area are available in NTSC format and PAL/SECAM format.
* Sets for other areas are of PAL/SECAM format.

| Ref. No. | Part No. | Description |
|---|---|---|
| **INTEGRATED CIRCUITS** | | |
| IC101 | AN78M20 | Regulator,+20V |
| IC102 | AN78M05 | Regulator,+5V |
| IC130 | AN78M15 | Regulator,+15V |
| IC131 | AN78M12 | Regulator,+12V |
| IC132 | AN7805 | Regulator,+5V |
| IC151,153,154 | SVINJ4559DDM | Pri-emphasis, Buffer |
| IC155,156 | MN6631 | Analog Switch |
| IC191 | MN1420PCF | Micro Computer |
| IC192 | MN4001B | NOR Gate |
| IC193 | MN4040B | 12-Bit Binary Counter |
| IC194 | MN4013B | D Flip Flop |
| IC211,212 | AN6552F | Buffer |
| IC213 | SVIUPD4066BC | Quad Bilateral Switch |
| IC214 | AN6870N | Display Drive |
| IC255 | SVINJ4559DDM | Microphone Amprifier |
| IC281,282 | SVINJM4556S | Head-phone Amprifier |
| IC302 | DN74LS123 | Multivibrator |
| IC303 | DN74LS74A or SVIHD74LS74P | D Flip Flop |
| IC305 | DN74LS00 or SVIHD74LS00P | NAND Gate |
| IC308,309 | SVITL082CP | Operational Amp. |
| IC310 | AN6552F | Comparator |
| IC311 | AN6914 | Comparator |
| IC312,313 | SVITL810CP | Operational Amp. |
| IC365,366 | SVITL082CP | Operational Amp. |
| IC367,368 | SVIUPD4066BC | Quad Bilateral Switch |
| IC369 | SVITL082CP | Operational Amp. |
| IC370,371 | SVIUPD4066BC | Quad Bilateral Switch |
| IC372 | DN74LS126A or SVIHD74LS126 | Buffer |
| IC373,374 | DN74LS74A or SVIHD74LS74P | D Flip Flop |
| IC375 | EHKMA6196 | D-A/A-D Converter |
| IC377,378 | SVITL082CP | Operational Amp. |
| IC379 | DN74LS02 | NOR Gate |
| IC401 | MN6603 | REC/PB Control |

| Ref. No. | Part No. | Description |
|---|---|---|
| **INTEGRATED CIRCUITS** | | |
| IC402,404 | DN74LS74A or SVIHD74LS74P | D Flip Flop |
| IC403 | DN74LS04 | Inverter |
| IC405 | DN74LS125A or SVIHD74LS125 | Buffer Gate |
| IC406 | DN74LS123 | Multivibrator |
| IC407 | DN74LS86 or SVIHD74LS86P | Exclusive OR Gate |
| IC408 | MN6602 | PB Control |
| IC409 | MN6601 | REC Control |
| IC410,411 | SVIHM6116P-4 | Randam Access Memory |
| IC412 | DN74LS161A or SVIHD74LS161 | 4-Bit Binary Counter |
| IC413 | DN74LS74A or SVIHD74LS74P | D Flip Flop |
| IC414 | DN74LS02 | NOR Gate |
| IC415 | DN74LS161A or SVIHD74LS161 | 4-Bit Binary Counter |
| IC416 | DN74LS74A or SVIHD74LS74P | D Flip Flop |
| IC417,418 | SVIHM6116P-4 | Randam Access Memory |
| IC420 | DN74LS123 | Multivibrator |
| IC421 | DN74LS126A or SVIHD74LS125 | Buffer |
| **IC481,482** [PAL] | DN74LS174 or SVIHD74LS174 | D Flip Flop |
| **IC483** [PAL] | DN74LS174 or SVIHD74LS174 | D Flip Flop |
| **IC485** [PAL] | DN74LS125A or SVIHD74LS125 | Buffer Gate |
| **IC486** [PAL] | DN74LS123 | Multivibrator |
| **IC487** [PAL] | SVITC5081AP | Phase Comparator |
| **IC488** [PAL] | SVISN74LS628 | Voltage Control OSC |
| IC501 | DN74LS02 | NOR Gate |
| IC502 | DN74LS123 | Multivibrator |
| IC503 | DN74LS00 or SVIHD74LS00P | NAND Gate |
| IC504,505 | DN74LS123 | Multivibrator |
| IC506 | DN74LS02 | NOR Gate |
| IC507 | DN74LS74A or SVIHD74LS74P | D Flip Flop |
| IC508 | DN74LS00 or SVIHD74LS00P | NAND Gate |
| IC509 | MN1542PCK | Micro Computer |

| Ref. No. | Part No. | Description |
|---|---|---|
| **INTEGRATED CIRCUITS** | | |
| IC510 | DN74LS157 or SVIHD74LS157 | Multiplexer |
| IC511 | SVISN74LS393 | 4Bit Binary Counter |
| IC512 | SVITL082CP | Operational Amp. |
| IC513 | SVIUPD4066BC | Quad Bilateral Switch |
| IC514 | SVITC40H004P | Inverter |
| IC515 | SVITL082CP | Operational Amp. |
| IC516 | SVINJ4559DDM | Operational Amp. |
| IC517~520 | DN74LS74A or SVIHD74LS74P | D Flip Flop |
| IC521 | DN74LS00 or SVIHD74LS00P | NAND Gate |
| IC522 | DN74LS126A or SVIHD74LS126 | Buffer |
| IC524 | DN74LS04 | Inverter |
| **TRANSISTORS** | | |
| Q101,102 | 2SD636 | Muting Circuit |
| Q103 | 2SB641 | Muting Circuit |
| Q104 | 2SD636 | Muting Circuit |
| Q105 | 2SB641 | Muting Circuit |
| Q151 | 2SD636 | L.E.D.Drive |
| Q191 | 2SB641 | Switching |
| Q192,193 | 2SD636 | Switching |
| Q194,195 | 2SD636 | Switching |
| Q211,212 | 2SD636 | Buffer |
| Q213,214 | 2SD636 | Buffer |
| Q215 | 2SD636 | Buffer |
| Q216 | 2SB641 | Switching |
| Q217 | 2SD636 | Switching |
| Q218 | 2SB641 | Switching |
| Q255,256 | 2SC2385-G | Microphone Amprifier |
| Q257,258 | 2SC2385-G | Microphone Amprifier |
| Q301 | 2SC2377 | Buffer |
| Q302,303 | 2SD636 | Input Amp. |
| Q304 | 2SC2377 | Input Amp. |
| Q305,306 | 2SD636 | Input Amp. C SYNC Separator |
| Q307,308 | 2SB641 | C SYNC Separator |
| Q309 | 2SD636 | Switching |
| Q310 | 2SB641 | FET Driver |
| Q311 | 2SK301 | Switching |
| Q313 | 2SD636 | Switching |
| Q365 | 2SD636 | Switching |

# SV-110

| Ref. No. | Part No. | Description |
|---|---|---|
| **TRANSISTORS** | | |
| Q501,502 | 2SD636 | Video Amp. |
| Q503 | 2SB641 | Video Amp. |
| Q504 | 2SD636 | Video Amp. |
| Q505,506 | 2SB641 | Video Amp. & Swiching |
| Q507,508 | 2SB641 | Switching |
| Q510 | 2SB641 | Switching |
| **DIODES** | | |
| D101,102 ⚠ | SVDS1WB10 | Rectifier |
| D103 ⚠ | SVDS4VB10 | Rectifier |
| D104 | MA4075 | 7.5V,Zener |
| D105 | MA4056 | 5.6V,Zener |
| D106,107 Ⓢ | MA162A | Switching |
| D151 | MA165 | Switching |
| D191 | MA165 | Switching |
| D193 | MA165 | Switching |
| D211,212 | MA165 | Switching |
| D213 | MA4068 | 6.8V,Zener |
| D214,215 Ⓢ | MA26TO-A | Switching |
| D216 | MA165 | Switching |
| D255 | MA165 | Switching |
| D301,302 | MA165 | Switching |
| D303,304 | MA165 | Switching |
| D305,306 | MA165 | Switching |
| D307,308 | MA165 | Switching |
| D365,366 | MA165 | Switching |
| D367 | MA4051 | 5.1V,Zener |
| D501 Ⓢ | MA26TO-A | Switching |
| D502 | SVDKV1236Z | Variable Capacitor Diode |
| D503 | MA165 | Switching |
| D611,612 | LN0401GP3 | System Indicator |
| D613,614 | SVDLD-101MG | System Indicator |

| Ref. No. | Part No. | Description |
|---|---|---|
| **DIODES** | | |
| D631,633 | LN229RP | REC/COPY Indicator |
| D632 | LN329YP | PBMUTE Indicator |
| **OSCILLATORS** | | |
| **X401** NTSC | SVQ43U1586 | Crystal, 15.86MHz |
| **X401** PAL | SVQ18C1575 | Crystal, 15.75MHz |
| X501,502 | EF0A4R0M01A | Ceramic, 4MHz |
| **COILS and TRANSFORMERS** | | |
| L120 ⚠ | ELF18D112 | Line Filter |
| L301 | ELB5F7 | Low Pass Filter |
| L302 | ELB5G038 | Delay Line |
| L501,502 | SLQ0930T300C | Balun Coil |
| L503~506 | ELEH100JA | Choke Coil |
| LPF151,152 | EULBPF304 | Low Pass Filter |
| T1 ⚠ | SLTF6642 | Power Source |
| **VARIABLE RESISTORS** | | |
| VR151 | EWGGDA510375 | Recording Balance |
| VR152 | EWJKDA016A15 | Recording Balance Adjustment 20kΩ(B) |
| VR211 | EVN38CA00B24 | Recovery Time Adjustment 100kΩ(B) |
| VR212 | EVN38CA00B16 | OdB Adjustment 10kΩ(B) |
| VR213 | EVN38CA00B14 | Head Phone Level |
| VR255 | EWCSNAF15AF5 | Offset Adj. 20kΩ(B) |
| VR365,366 | EVN38CA00B24 | 5kΩ(B) |
| VR501 | EVN38CA00B53 | 10kΩ(B) |
| VR502,503 | EVN38CA00B14 | |

| Ref. No. | Part No. | Description |
|---|---|---|
| **VARIABLE RESISTORS** | | |
| VR504 | EVMG0GA01B54 | 50kΩ(B) |
| **VARIABLE CAPACITOR** | | |
| **TC485** PAL | ECV1ZW50X32E | ADCK PLL Lock Adj. |
| **FLUORESCENT DISPLAY TUBE** | | |
| FL201 | SSDQBG193Z | Level/Tracking Indication |
| **RELAY** | | |
| RLY151,260 | SFDYQ11N02 | Muting |
| **SWITCHES** | | |
| S1 ⚠ | SFDSSDS3P | Power Switch |
| S2 ⚠ | ESE37200 | Voltage Selector |
| S621 | SSDS2K4KB1X | Master Switch, Playback Mode Switch |
| S631 | EVQQJ104K | Recording/Copy Muting |
| S632 | EVQQJ104K | Peak Hold |
| S633 | EVQQJ104K | Tracking |
| S634 | EVQQJ104K | Copy |
| S635 | EVQQJ104K | Playback Muting |
| **FUSE** | | |
| F120 ⚠ | XBA2C10TRO | T1A,250V |
| F121 ⚠ | XBA2C03TRO | T315mA,250V |

| Ref. No. | Part No. | Description |
|---|---|---|
| **CABINET AND CHASSIS PARTS** | | |
| 1 ○ | SSBP110N01E | Front Panel(Silver),with Power Switch Button (1) |
| 1 Ⓚ | SSBP110N11E | Front Panel(Black),with Power Switch Button (1) |
| 2 | SBC261-1 | Button,Power Switch (1) |
| 3 | SUS193 | Spring,Power Switch Button (2) |
| 4 | SSUZ110N03 | Sheet (2) |
| 5 | SBN947-1 | Knob,Recording Balance/ Head Phones Level (2) |
| 6 | SBN943-1 | Knob,Recording Level (1) |
| 7 | SSKT110N07 | Button,Peak Hold (1) |
| 8 | SSKT110N09 | Button,Tracking (1) |
| 9 | SSKT110N08 | Button,Play Back Muting (1) |
| 10 | SSKT110N10 | Button,Copy (1) |
| 11 | SSKT110N02 | Button,Recording Muting (1) |
| 12 | SSQA110N01 | Spring,Buttons (4) |
| **13** ○ | SSUM110N01E | Sub Panel (Silver) (1) |
| **13** Ⓚ | SSUM110N11E | Sub Panel (Black) (1) |
| **14** ○ | SSUP110N03 | Cabinet (Silver) (1) |
| **14** Ⓚ | SSUP110N13 | Cabinet (Black) (1) |
| 15 | SBC315-4 | Button,PB Mode/Master VTR Selector (2) |
| 16 | SSDJ3315020 | Jack,Head Phone (1) |
| 17 | SSDJ3315010 | Jack,Microphone (2) |
| 18 | SJF3225N | Terminal Plate,Video Input/Output (1) |
| 19 | SSUM110N02 | Holder,L.E.D. (1) |
| 20 | SSUP110N01 | Bottom Board (1) |
| 21 | SKL117-1 | Foot (4) |
| 22 | SSUM110N03 | Spacer,P.C.Board (2) |
| 23 | SFDBC07-01 | Bushing,Regulator IC (3) |
| 24 | SFDCC07-01 | Insulator, Regulator IC (3) |
| 25 | SSUM110N04 | Clamper,Lead Wires (2) |
| **26**〔XA,PC〕 ⚠ | SFDJHSC0491 | Jack,AC IN (1) |
| **26**〔Other areas〕 ⚠ | SFDJHSC0516 | Jack,AC IN (1) |
| **28**〔E〕 | SFNN110S01 | Name Plate (1) |

| Ref. No. | Part No. | Description |
|---|---|---|
| **28**〔PC〕 | SFNN110P02 | Name Plate (1) |
| **28**〔XA〕 | SFNN110X01 | Name Plate (1) |
| **28**〔EK〕 | SSNN110G01 | Name Plate (1) |
| **28**〔Other areas〕 | SSNN110R1 | Name Plate (1) |
| 29 | SSUZ101N01 | Felt (1) |
| 30 | SJF3059-4N | Terminal Plate, Line Input/Output, Video Input/Output, Monitor Output (1) |
| 31 | SSUM101N08 | Latch,P.C.B (2) |
| 32 | SSUM110N08 | Bracket (1) |
| 34 | SJT347 | Holder,Fuses (4) |
| **35** | SFDJW-D0603 | Connector (3pin) (2) |
| **35** | SFDJW-D0605 | Connector (5pin) (1) |
| **35** | SFDJW-D0606 | Connector (6pin) (1) |
| 36 | SSGZ110N01 | Spacer,L.E.D. (3) |
| **37** ○ | SSGK110N01 | Cap(Silver),Video Input/Output Terminal (1) |
| **37** Ⓚ | SSGK110N11 | Cap(Black),Video Input/Output Terminal (1) |
| 38 | SSKK110N02 | Filter (1) |
| 39 | SSDC110N01 | Sheet, (1) |
| 40 | SUV453 | Cover, Voltage Selector (1) |
| **SCREWS,WASHERS AND NUTS** | | |
| N1 Ⓢ | XTN3+6B | Screw,Front Panel (7) |
| N2 Ⓢ | XTV3+6BFZ | Screw,P.C.Board Power Transformer, Foot (15) |
| N3 Ⓢ | XTV3+6BFZ | Screw,Rec Mute Button (1) |
| **N4** Ⓢ○ | XTB4+8BFN | Screw,Cabinet(Silver) (4) |
| **N4** ⓈⓀ | XTB4+8BFZ | Screw,Cabinet(Black) (4) |
| N5 | SRXG010N12 | Screw,Power Switch Voltage Selector P.C.Board Heat Sink,A.C.Socket (11) |
| N6 Ⓢ | XTV3+8BFZ | Screw,Terminal Plate (4) |
| N7 | XTN3+55J | Screw, (2) |
| N8 Ⓢ | XTV3+6BFN | Screw, P.C.Board (12) |
| N9 Ⓢ | XTV3+8BFN | Screw,P.C.Board (2) |

| Ref. No. | Part No. | Description |
|---|---|---|
| N10 Ⓢ | XSN3+8S | Screw,Regulator IC (3) |
| N10 Ⓢ | XWA3B | Washer,Regulator IC (3) |
| N11 | SSXW110N01 | Washer,Volume (2) |
| N12 Ⓢ | XNS12 | Nut,Head Phone Jack, Microphone Jack (2) |
| N13 Ⓢ | XNS8 | Nut,Volume (3) |
| **ACCESSORIES** | | |
| **A1**〔EK〕 | SSNU110G01 | Instruction Book (1) |
| **A1**〔Ei〕 | SSNU110I01 | Instruction Book (1) |
| **A1**〔EG, EF,XA〕 | SSNU110X01 | Instruction Book (1) |
| **A1**〔PC〕 | SSNUN0P01 | INstructiuon Book (1) |
| **A1**〔Other areas〕 | SSNU110S01E | Instruction Book (1) |
| **A2**〔EK〕 ⚠ | SFDAC05G02 | AC Cord (1) |
| **A2**〔XA〕 ⚠ | SFDAC05X02 | AC Cord (1) |
| **A2**〔PC〕 ⚠ | SFDAC05N01 | AC Cord (1) |
| **A2**〔Other areas〕 ⚠ | SFDAC05E02 | AC Cord (1) |
| A3 | SFDHC05N01 | Cord,Line Input/Output (2) |
| A4 | SSDH101N02 | Cord,Video Input (2) |
| A5 | SSDK101S01 | BNC Adaptor (2) Instruction Book (1) |
| **A6** PAL | SSDK101S01 | BNC Adaptor (2) |
| A7〔XA〕 ⚠ only | SFDKI19118 | 2pin-Plug (1) |
| A8〔PC〕 ⚠ only | QJP0603S | Gimens Adaptor (1) |
| **PACKING PARTS** | | |
| **P1**〔EF〕 ○ only | SSHP110C01 | Carton Box(Silver) (1) |
| **P1**〔Other areas〕 ○ | SSHP110M01 | Carton Box(Silver) (1) |
| **P1**〔EF〕 Ⓚ only | SSHP110C11 | Carton Box(Black) (1) |
| **P1**〔Other areas〕 Ⓚ | SSHP110M11 | Carton Box(Black) (1) |
| P2 | SSHH110N01E | Pad,Front(Left) (1) |
| P3 | SSHH110N02E | Pad,Front(Right) (1) |
| P4 | SSHH110N03 | Pad,Rear(Left) (1) |
| P5 | SSHH110N04 | Pad,Rear(Right) (1) |
| P6 | SSHD110N01 | Box,Cords (1) |
| P7 | SFYH60×60 | Polyethylene Bag,Set (1) |
| P8 | SFYH17×16 | Polyethylene Bag,Cords (3) |



Printed in Japan
840203700 Ⓗ TK

ORDER NO. DAD84020065C1

# Service Manual

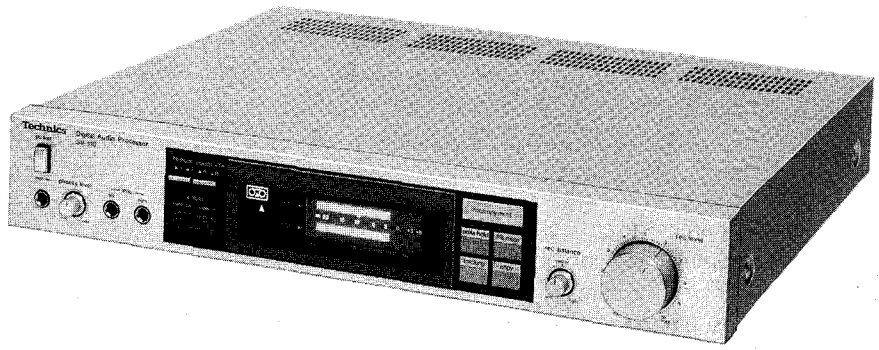
Digital Audio Processor

DIGITAL

For NTSC format

# SV-110

[M], [MC]



**Areas**

* [M] is available in U.S.A.
* [MC] is available in Canada.

## Specifications

Specifications are subject to change without notice the further improvement.
Weights and dimensions shown are approximate.

### ■ General

| | |
|---|---|
| **Power supply:** | 120 V, AC 60 Hz |
| **Power consumption:** | 40 W |
| **Dimensions:** | 43 W x 37.5 D x 7.6 H cm<br>(16-15/16" x 14-3/4" x 3") |
| **Weight:** | 6.1 kg (13.7 lb.) |

### ■ System Type

| | |
|---|---|
| **Type:** | Digital audio processor |
| **PCM standard:** | Consumer PCM encoder/decoder standards file STC-007 of the EIAJ stereo technical committee, video technical committee. |
| **Quantization:** | Recording: with emphasis |
| **Coding:** | 14-bit linear |
| **Number or audio channels:** | 2 (L, R stereo) |
| **Frequency response:** | 2 Hz ~ 20 kHz ( ± 0.5 dB) |
| **Total harmonic distortion:** | 0.01% or less (1 kHz, 0 dB) |
| **Dynamic range:** | 86 dB or more |
| **Wow and flutter:** | Unmeasurable<br>(Below measurement threshold) |

### ■ Input level and impedance

| | |
|---|---|
| **Line:** | 55 mV [at reference input level (–15 dB indication)] / 50 kΩ |
| **Microphone:** | 1.1 mV [at reference input level (–15 dB indication)] / 600 Ω |
| **Video:** | 1Vp-p/75 Ω |

### ■ Output level and impedance

| | |
|---|---|
| **Line:** | 310mV [at reference output level (–15 dB indication)] / 220 Ω |
| **Video:** | 1Vp-p/75 Ω |
| **Monitor:** | 1Vp-p/75 Ω |

Technics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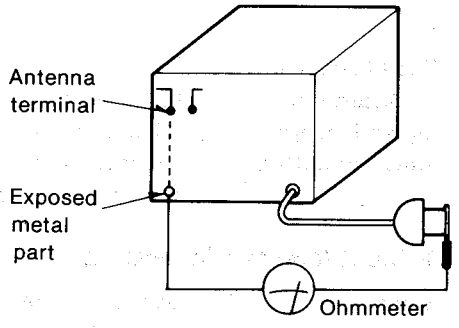
## ■ SAFETY PRECAUTION

1. Before servicing, unplug the power cord to prevent an electric shock.
2. When replacing parts, use only manufacturer's recommended components for safety.
3. Check the condition of the power cord. Replace if wear or damage is evident.
4. After servicing, be sure to restore the lead dress, insulation barriers, insulation papers, shields, etc.
5. Before returning the serviced equipment to the customer, be sure to make the following insulation resistance test to prevent the customer from being exposed to a shock hazard.

### • INSULATION RESISTANCE TEST

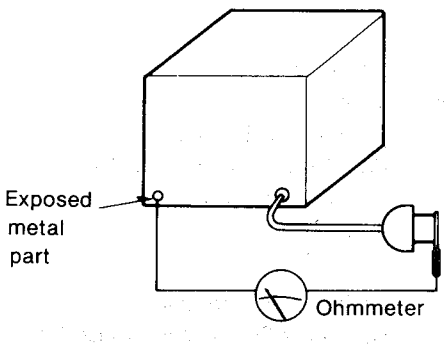
1. Unplug the power cord and short the two prongs of the plug with a jumper wire.
2. Turn on the power switch.
3. Measure the resistance value with ohmmeter between the jumpered AC plug and each exposed metal cabinet part, such as screwheads antenna, control shafts, handle brackets, etc. Equipment with antenna terminals should read between 3MΩ and 5.2MΩ to all exposed parts. (Fig. A) Equipment without antenna terminals should read approximately infinity to all exposed parts. (Fig. B)

**Note:** Some exposed parts may be isolated from the chassis by design. These will read infinity.




(Fig. A)

Resistance = 3MΩ—5.2MΩ

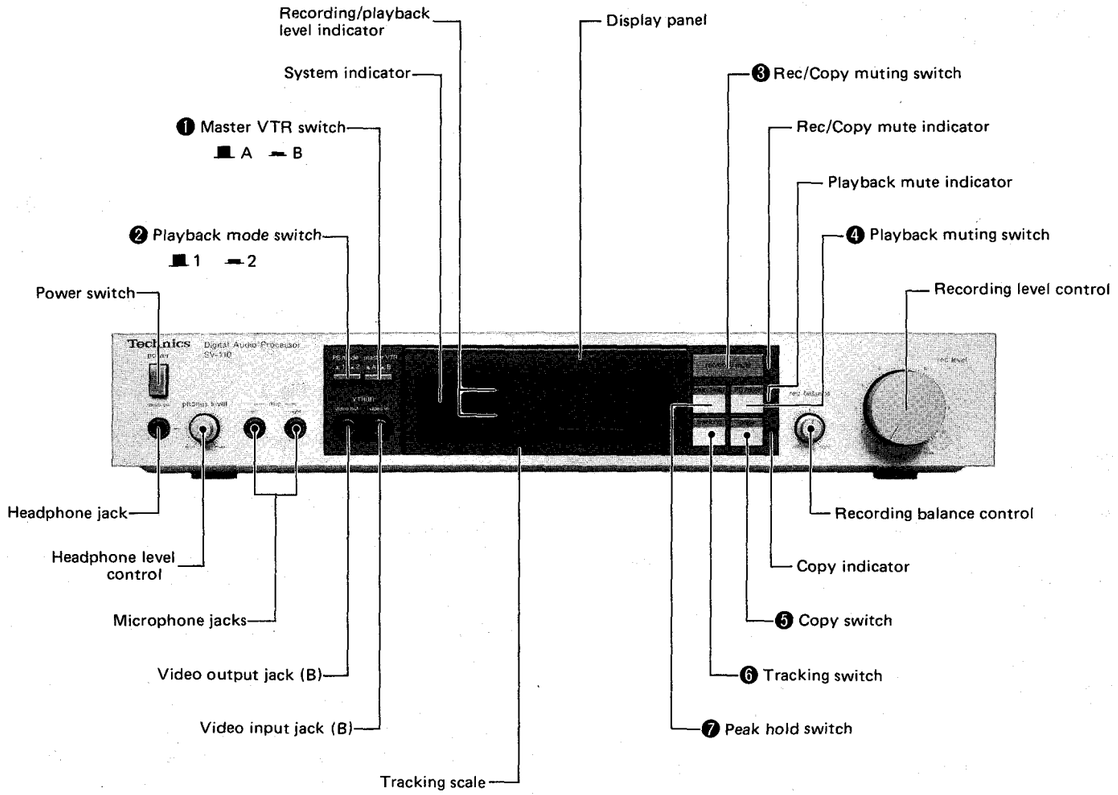


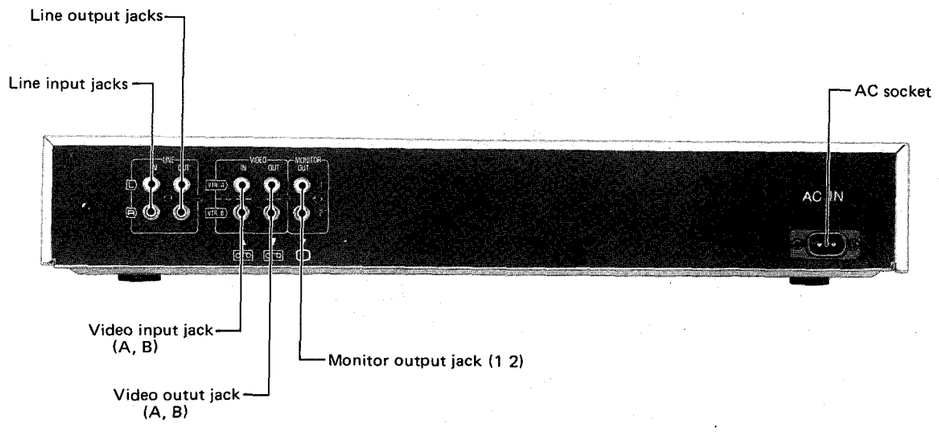

(Fig. B)

Resistance = Approx ∞

4. If the measurement is outside the specified limits, there is a possibility of a shock hazard. The equipment should be repaired and rechecked before it is returned to the customer.

## ■ LOCATION OF CONTROLS




## ■ FUNCTIONS

### ❶ Master VTR switch (master VTR A B)
- When making digital tape copies, use this switch to select which VTR is playing the master tape.
- During ordinary PCM recording and playback, set this switch to the position (A or B) that matches the rear panel jacks to which your VTR is connected.
- This is also used to switch between video (position B) and PCM (position A) operation.

### ❷ Playback mode switch (playback mode 1 2)
- Used to select the demodulation mode that best matches the playback signal characteristics of the VTR being used.

### ❸ Recording muting switch (rec/copy mute)
- Press when you want to record a blank space on the tape.
- Recording muting (no-signal recording) only takes place as long as this switch is kept depressed during recording.

### ❹ Playback muting switch
- Playback muting along with the playback mute indicator are tuned on automatically when the unit's power is turned on. In this state, playback noise (caused by dropouts, poor tracking, and so forth) is muted automatically so that any parts of the tape with extremely poor quality are not reproduced.
- By pressing this switch , it turns playback muting off (and the indicator goes out).
- Press again to turn muting back on.

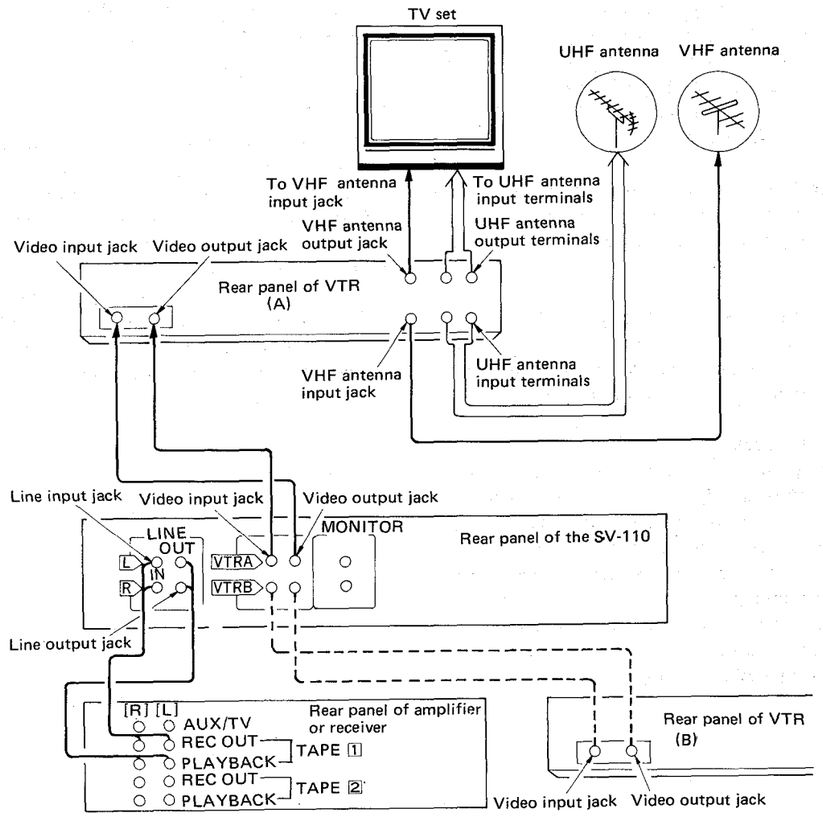
### ❺ Copy switch
- This is pressed when two VTRs are used to make digital tape copies. (Copy indicator on)
- Press again to return to normal condition. (Copy indicator off)

### ❻ Tracking switch
- When this is pressed, the level indicator scale markings go off and the left channel is no longer shown. Instead, the right channel display shows tracking quality.
- Press again to return to normal indication.

### ❼ Peak hold switch
- Peak hold indication is normally reset every two seconds.
- Press this switch to hold the peak indication for longer periods of time during recording or playback.
- Press again to return to the audio reset (2-second) peak hold indication.

## ■ CONNECTION AND OPERATION

- **Connections for PCM Recording/Playback and TV Program Recording/Playback**




- **How to operation**

**PCM recording and playback**

① Shift the video input select switch to "Ext. Input" or "Camera".
② Follow the normal procedure for PCM record and playback.

**TV program recording and playback**

① Shift the video input select switch to "Tuner" or "TV"..
② Follow the normal procedure for TV program record and playback.

**Digital dubbing (copying)**

① Connect record video (B) as shown above.
② Put the master video cassette into playback (master) video (A).
③ Set the master switch to " ▲ A", then shift playback video (A) to playback mode and recording video (B) to recording mode.

**Note:** With master switch set to " ▼ B", digital dubbing from video (B) to video (A) is possible.

④ To finish dubbing (copying), push the Rec/copy muting switch to prevent noise, and about 5 sec. later, stop the recording video.



## ■ DISASSEMBLY INSTRUCTIONS

- **How to remove the cabinet**

1. Remove the 4 setscrews **(Fig. 1 : ❶ ~ ❹)** of the cabinet.
2. Remove the cabinet.

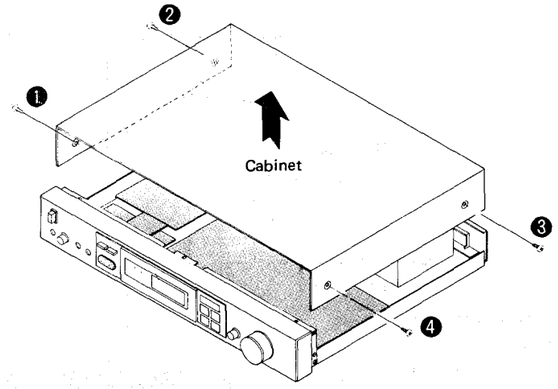



**Fig. 1**

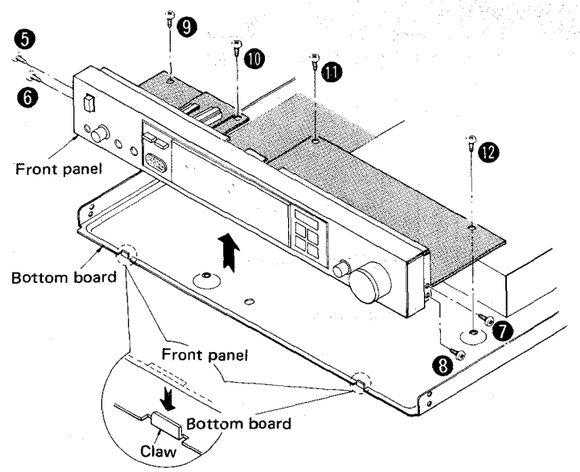



**Fig. 2**

- **How to remove the front panel**

1. Remove the cabinet.
2. Remove the 4 setscrews (red) **(Fig. 2 : ❺ ~ ❽)** of the front panel and the 4 setscrews **(Fig. 2 : ❾ ~ ⓬)** of the P.C.B.
3. Remove the 3 setscrews **(Fig. 3 : ⓭ ~ ⓯)** of the front panel.
4. Pull out the front panel with care not to scratch the knobs. **(See Fig. 3.)**
5. When fitting the front panel, match the claws of bottom board with the holes in the front panel. **(See Fig. 2.)**

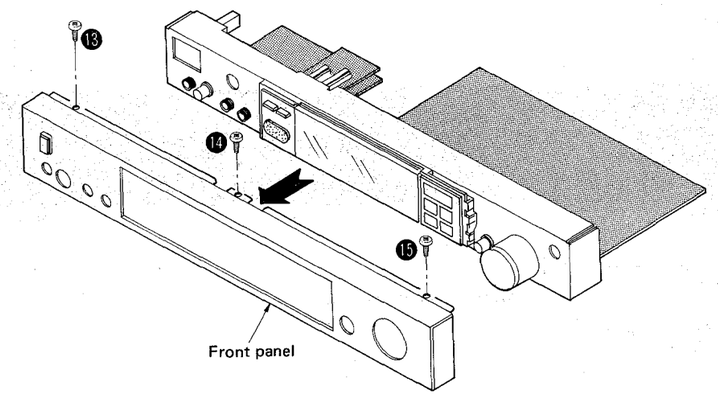



**Fig. 3**

## • How to remove the sub-panel

1. Remove the cabinet and front panel.
2. Release the 3 claws of switch P.C.B. and the 2 claws of LED P.C.B. **(See Fig. 4.)**
3. Release the 2 claws of sub-panel and FL respectively. Then pull out the sub-panel. **(See Fig. 4.)**

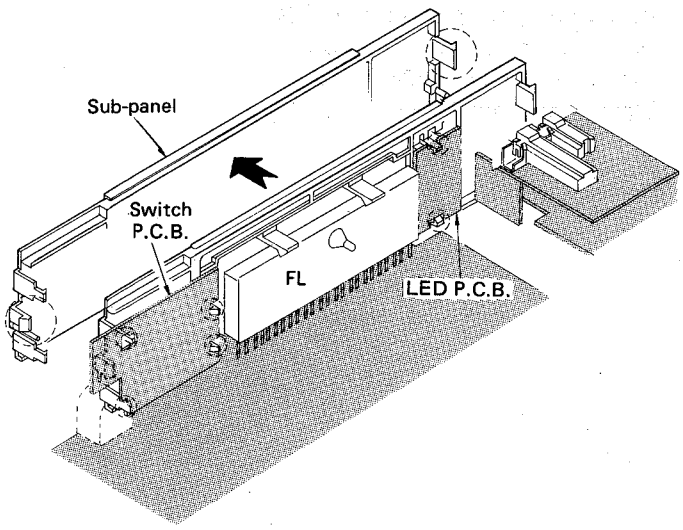



**Fig. 4**

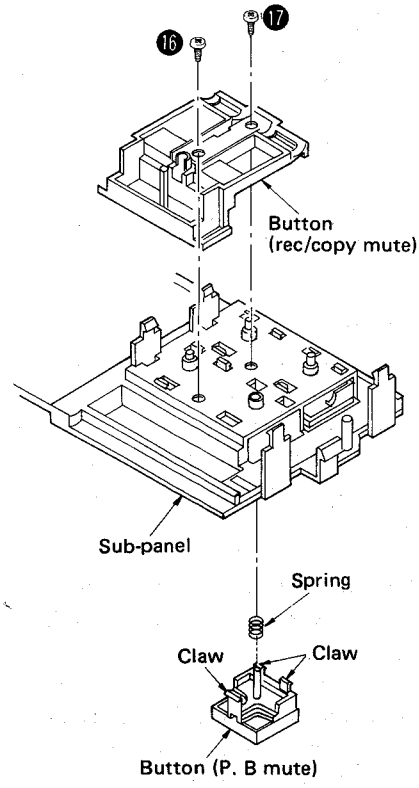



**Fig. 5**

## • How to remove buttons (rec/copy mute, peak hold, indicator, PB mute, copy)

1. Remove the cabinet and front panel.
2. Remove the sub-panel, and the 2 setscrews **(Fig. 5 : ⑯, ⑰ )** of rec/copy mute button, getting across from the back.
3. Release the claws of each button and remove the button. **(See Fig. 5.)**

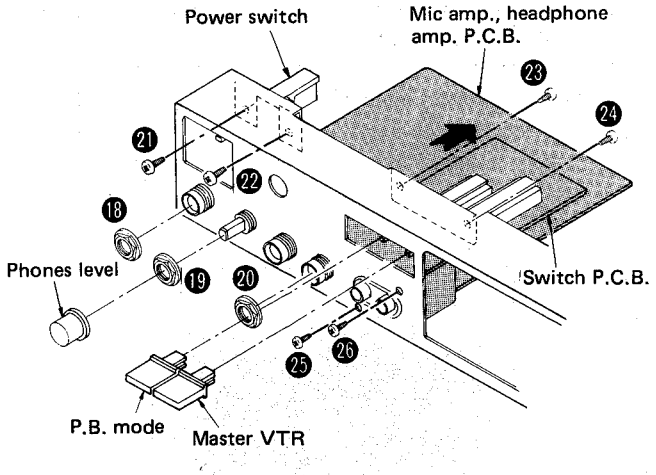



**Fig. 6**

## •. How ro remove mic amp, headphone amp P.C.B. and power switch

1. Remove the cabinet and front panel.
2. Remove the jack and volume nuts **(Fig. 6 : ⑱ ~ ⑳ )**.
3. To remove the power switch, remove the setscrews **(Fig. 6 : ㉑, ㉒ )**.

## • How to remove the switch P.C.B. and video input/output terminals

1. Remove the sub-panel.
2. Remove the 2 buttons and setscrews **(Fig. 6 : ㉓, ㉔ )** of the switch board.
3. Remove the 2 setscrews **(Fig. 6 : ㉕, ㉖ )** of video input/output terminals.

- **How to remove the main P.C.B.**

1. Remove the cabinet and front panel.
2. Remove the 2 knobs. **(See Fig. 7.)**
3. Remove the 2 volume nuts. **(See Fig. 7.)**

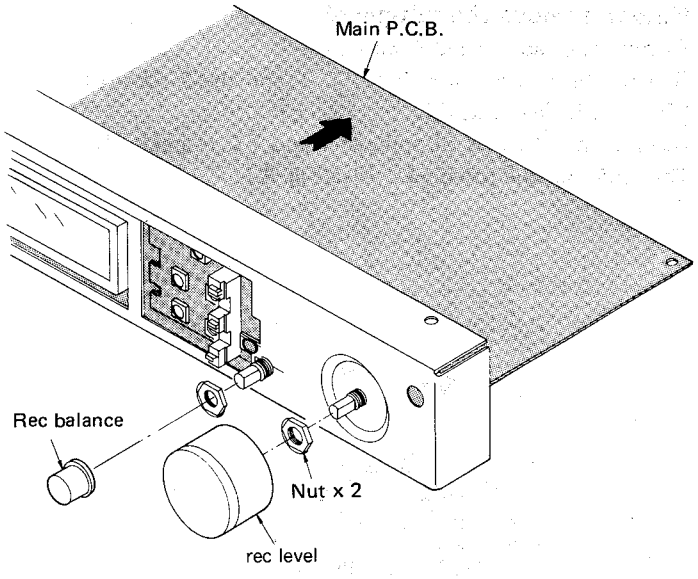



**Fig. 7**

## ■ TROUBLE SHOOTING

Check the connection of each instrument and knob position before repair, and use the table below.

| Problem | Cause | Solution |
|---|---|---|
| **No recording with video in rec mode.** | * Video cassette lug is broken.<br>* Recording level is low. (When level indicator is not deflected.) | * Cover the hole in the cassette with tape.<br>* Adjust recording level watching the level indicator. |
| **Neither recording nor playback are possible.** | * VTR is defective.<br>* The unit is out of order. | * Check VTR and unit with reference to **"Checking by use of a TV set"** given in the following. |
| **Noise is made during playback.**<br>**Playback quality is poor.** | * Video cassette tape is defective.<br>* Tracking adjustment is not sufficient.<br>* VTR head area is stained. | * Play another recorded tape. If playback is perfect, the previous tape is defective or recording connections are bad. (It can also be checked by recording a picture on the tape to check for noise.)<br>* Select either "1" or "2" of playback mode. Also, adjust tracking of the VTR used.<br>* Clean the VTR'S video head. |
| **Playback sound is distorted.** | * Recording level is too high or low.<br>* Analog circuit is defective. | * Select optimum recording level.<br>* Check analog circuit. |

## ■ CHECKING BY USE OF A TV SET

If recording and playback are not possible or noise is made during playback, it can be checked by using a TV to check whether the cause is in the unit or in video.

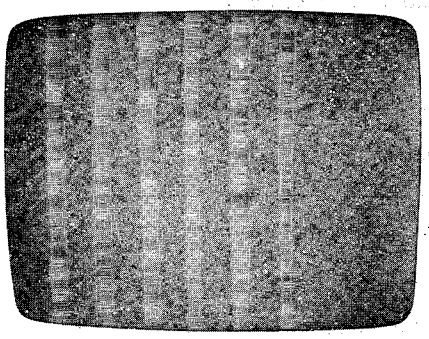
- **Check of VTR**

1. Record a picture on the VTR.
2. Play it on the TV. If the picture is normal, then the VTR is normal.
3. If noise is excessive on the picture, the possible causes are scratches on the tape, insufficient adjustment of tracking, and stains on VTR's head.

Tape is damaged if this kind of picture appears and cannot be corrected using tracking adjustment.

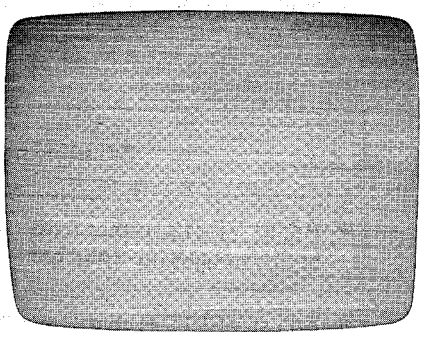
- **Check of the unit**

1. After PCM recording, play the video cassette on a TV.
2. If the picture is like **photo 1**, the tape is PCM-recorded, and normal. If it is like **photo 2**, the tape is not PCM-recorded and blank. The recording system may be defective.
3. If the picture is like **photo 3**, no signal is recorded on the tape. If this picture appears when the level indicator is deflected, the recording system of digital circuit may be defective. If this picture appears when the level indicator is not deflected, the recording system of analog circuit may be defective.
4. Check it by playing the PCM recorded video cassette tape.



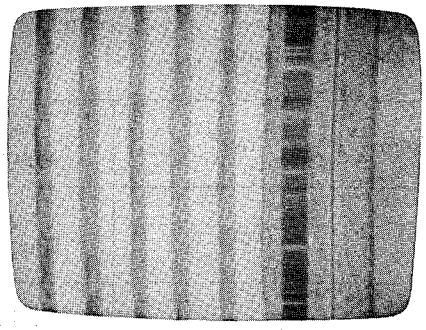
**(Photo 1)**

Tape is PCM-recorded, and normal. (Normal)



**(Photo 2)**

Tape is not PCM-recorded, and blank. (No recording)



**(Photo 3)**

Tape is PCM-recorded but no signal is recorded. (No signal)

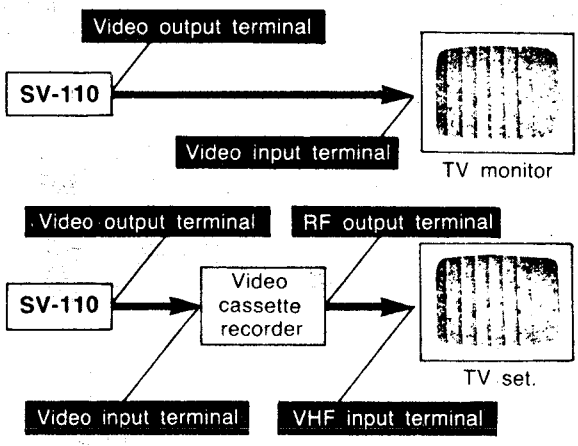
- **To check whether the SV-100 is recording properly:**

There are two connection methods that can be used to check whether this unit is recording signals properly.

**[Procedure]**

- Use the LINE IN or microphone input for the recording input signal.
- Adjust the recording level control of the SV-110 so the recording/playback level indicators rise and fall. At this time, the television screen should show the pattern shown above if the SV-110 is properly recording the input signal.

**[How to connect]**




## ■ ABOUT VIDEO CASSETTES AND RECORDERS

- On the average a typical video cassette tape can be used about 300 times (for recording and playback). If the same tape is used too many times, magnetic surface wear and tape stretch may interfere with normal playback. However, how many times a tape can be used depends on tape quality, VTR used, and the environment.
- Because video playback is seen by the human eye as a continuously moving picture, dropouts are rarely noticeable. However, in PCM recording and playback, dropouts can cause noise because they interfere with correct retrieval of the digital signal information.
  Of course, error correction circuitry and playback muting serve to minimize this problem. But the point is that tape quality is much more important for PCM recording and playback than it is for video.
- Therefore, for PCM recording it is recommended that you use the best quality video cassettes possible and if they are not new they should have been used only a few times.
- Clean the video heads from time to time. Good PCM recordings cannot be made if the heads are dirty.
- For best PCM recording and playback results, it is recommended that you use HG (high grade) VHS video cassettes.
- To avoid accidental erasure, break off the video cassette's safety tab after recording.

# ■ MEASUREMENTS AND ADJUSTMENT

## • Adjustment of display circuit

After repair of display circuit, make the adjustment as follows:

- **Instruments used and setting**

1. AC electronic voltmeter
2. 100 Hz sine-wave oscillator
3. Recording level . . . . . .max.
4. Recording balance . . . . . .center
5. Playback mode switch . . . . . .1
6. Connect 100 Hz sine-wave oscillator and AC electronic voltmeter to LINE IN.
7. Adjust the oscillator so that the input of LINE IN is 319 mV.

| Step | Item | Parts adjusted | Adjusting procedure |
|---|---|---|---|
| 1 | 0 dB | VR213 **(Fig. 8)** | • Adjust VR213 so that 0 dB (B16) of level meter on the right begins to light up. **(Fig. 9)** |
| 2 | Balance | VR211 **(Fig. 8)** | • Adjust VR211 so that 0 dB (B16) of level meter on the left begins to light up. **(Fig. 9)** |
| 3 | Recovery time | VR212 **(Fig. 8)** | • Instantaneously cut off the input of LINE IN and check the falls of right and left channels of level meter.<br>• If there is a difference between right and left channels, adjust VR212 until no difference. |

## • Adjustment points

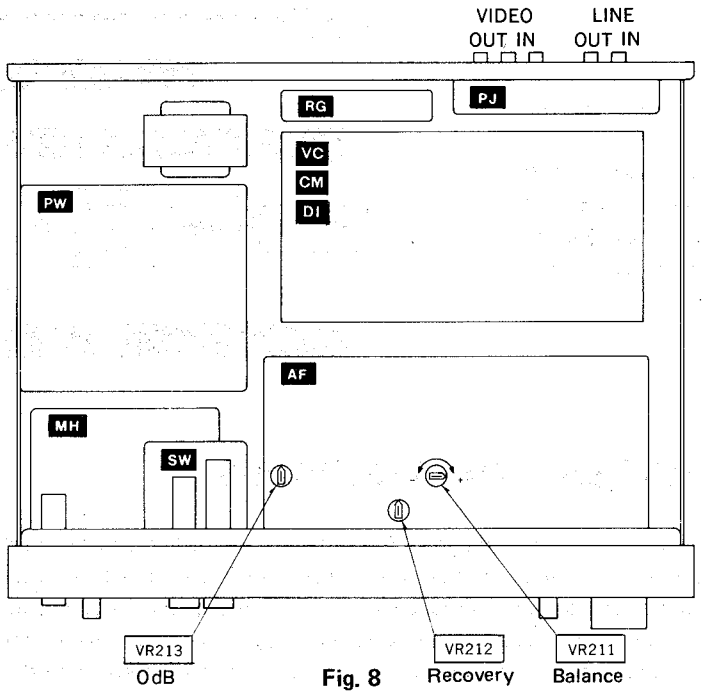



Fig. 8

## • Display

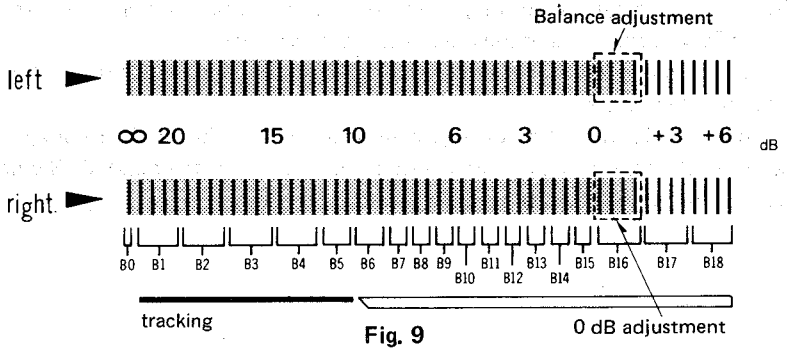

Balance adjustment
left
∞ 20 15 10 6 3 0 +3 +6 dB
right
B0 B1 B2 B3 B4 B5 B6 B7 B8 B9 B10 B11 B12 B13 B14 B15 B16 B17 B18
tracking
0 dB adjustment

Fig. 9

# ■ DISCRIPTION OF EACH TERMINAL OF MN1420PCF

| Pin No. | Symbol | Description |
|---|---|---|
| 1 | VSS | Ground terminal |
| 2 | CO11 | MCK select control terminal<br>INTERNAL . . . . . ."H"<br>AUTO . . . . . ."L" |
| 3 | CO10 | Vertical synchronizing signal control terminal |
| 4 | CO9 | PLL frequency dividing signal control terminal |
| 5 | CO8 | Reset control terminal<br>Reset mode . . . . . ."L"<br>Normal mode . . . . . ."H" |
| 6 | CO7 | PAL/NTSC select control terminal<br>PAL. . . . . ."H"<br>NTSC. . . . . ."L" |
| 7 | CO6 | Muting control terminal in cue and review<br>Cue, review . . . . . ."L"<br>Normal mode . . . . . ."H" |
| 8<br>9 | CO5<br>CO4 | } Rec/playback select control terminal<br>Pin No. \| 8 \| 9<br>Rec mode \| "L" \| "H"<br>Play mode \| "H" \| "L" |
| 10 | CO3 | Muting circuit, control terminal<br>Muting on . . . . . ."L"<br>Muting off . . . . . ."H" |
| 11 | CO2 | Display select control terminal<br>Tracking display. . . . . ."H"<br>Level display. . . . . ."L" |
| 12 | CO1 | Peak hold control terminal<br>Peak hold . . . . . ."H"<br>Normal mode . . . . . ."L" |
| 13 | CO0 | Display muting control terminal<br>Muting mode . . . . . ."H"<br>Normal mode . . . . . ."L" |
| 14<br>15<br>16<br>17<br>18 | AI3<br>AI2<br>AI1<br>AI0<br>BI3 | Tracking<br>Peak hold<br>Copy<br>Playback muting<br>Record muting<br>} Key scan input |
| 19 | BI2 | PLL lock detection input terminal<br>Lock mode. . . . . ."L"<br>Free mode . . . . . ."H" |

| Pin No. | Symbol | Description |
|---|---|---|
| 20 | BI1 | Rec/Play checking input terminal<br>Rec mode . . . . . ."L"<br>Play mode . . . . . ."H" |
| 21 | BI0 | Master VTR select input terminal<br>VTR A . . . . . ."H"<br>VTR B . . . . . ."L" |
| 22<br>23<br>24<br>25 | EO0<br>EO1<br>EO2<br>EO3 | } System indicator control output terminals |
| 26 | TST | Test terminal (not used, connected to ground) |
| 27 | RST | Reset terminal (microcomputer is reset at "L".) |
| 28 | $\overline{\text{CSLCT}}$ | Vertical synchronizing signal frequency dividing (1/4) input terminal. |
| 29 | SNS0 | 122 Hz input terminal |
| 30 | SNS1 | 31.25 kHz input terminal |
| 31 | DO0 | Copy indicator terminal |
| 32 | DO1 | Playback muting indicator terminal |
| 33 | DO2 | Record muting indicator terminal |
| 34 | DO3 | Video output control terminal<br>Copying mode. . . . . ."H"<br>Normal mode . . . . . ."L" |
| 35 | DO4 | Playback muting control terminal<br>Playback muting on. . . . ."H"<br>Playback muting off . . . ."L" |
| 36 | DO5 | Record muting control terminal<br>Record muting on. . . . . ."H"<br>Record muting off . . . . ."L" |
| 37 | DO6 | Copy muting control terminal<br>Copy muting on. . . . . ."H"<br>Copy muting off . . . . . ."L" |
| 38 | DO7 | MCK select control terminal<br>INTERNAL . . . . . ."H"<br>AUTO . . . . . ."L" |
| 39 | VDD | Power supply (+5V) |
| 40 | OSC | Oscillation circuit<br>(clock frequency : 250 kHz) |

# ■ RESISTORS AND CAPACITORS

**Notes:**
1. Part numbers are indicated on most mechanical parts. Please use this part number for parts orders.
2. Important safety notice: Components identified by ⚠ mark have special characteristics important for safety. When replacing any of these components use only manufacturer's specified parts.
3. The "Ⓢ" mark is service standard parts and may differ from production parts.
4. The unit of resistance is Ω(ohm). K = 1000Ω , M = 1000kΩ
5. The unit of capacitance is μF (microfarad) P = $10^{-6}$ μF

## Numbering System of Resistor

Example

| | | | | |
|---|---|---|---|---|
| ERD | 25 | F | J | 101 |
| Type | Wattage | Shape | Tolerance | Value |
| ERX | 2 | AN | J | 2R2 |
| Type | Wattage | Shape | Tolerance | Value |

| Resistor Type | | Wattage | | Tolerance | |
|---|---|---|---|---|---|
| ERD | : Carbon | 25 | : 1/4W | G | : ± 2% |
| ERG | : Metal Oxide | 1 | : 1W | J | : ± 5% |
| ERO | : Metal Film | S2 | : 1/4W | K | : ± 10% |
| ERQ | : Fuse | | | | |

## Numbering System of Capacitor

Example

| | | | | |
|---|---|---|---|---|
| ECKD | 1H | 102 | Z | F |
| Type | Voltage | Value | Tolerance | Peculiarity |
| ECEA | 50 | M | R47 | R |
| Type | Voltage | Reculiarity use | Value | Special use |

| Capacitor Type | | Voltage | | Tolerance | |
|---|---|---|---|---|---|
| ECEA | : Electrolytic | OJ | : 6.3V | C | : ± 0.25pF |
| ECEB | : Electrolytic | 1A | : 16V | G | : ± 2% |
| ECEA. . . N | : Non Polar Electrolytic | 1C | : 16V | J | : ± 5% |
| ECCD | : Ceramic | 1E | : 25V | K | : ± 10% |
| ECCR | : Ceramic | 25 | : 25V | M | : ± 20% |
| ECKD | : Ceramic | 1V | : 35V | P | : +100%, −0% |
| ECQM | : Polyester | 1H | : 50V | Z | : +80%, −20% |
| ECQP | : Polypropylene | MY | : 125VAC | | |
| ECES | : Electrolytic | ECQP1 | : 100V | | |

## ● RESISTORS

| Ref. No. | Part No. | Value |
|---|---|---|
| R101,102 ⚠ | ERQ1CJ1R0 | 1 |
| R104 | ERDS2TJ103 | 10K |
| R105 | ERDS2TJ152 | 1.5K |
| R106 | ERDS2TJ103 | 10K |
| R107,108 | ERDS2TJ221 | 220 |
| R109,110 | ERDS2TJ103 | 10K |
| R111 Ⓢ | ERGIANJ221 | 220 |
| R112,113 | ERDS2TJ681 | 680 |
| R114 | ERDS2TJ103 | 10K |
| R130 | ERDS2TJ100 | 10 |
| R131 | ERDS2TJ221 | 220 |
| R149,150 | ERDS2TJ474 | 470K |
| R151,152 | ERDS2TJ104 | 100K |
| R153,154 | ER0S2TKG3902 | 39K |
| R155,156 | ER0S2TKG3601 | 3.6K |
| R157,158 | ER0S2TKG1102 | 11K |
| R159,160 | ER0S2TKG2701 | 2.7K |
| R161,162 | ER0S2TKG2701 | 2.7K |
| R163,164 | ER0S2TKG2401 | 2.4K |
| R165,166 | ER0S2TKG2401 | 2.4K |
| R167,168 | ER0S2TKG3902 | 39K |
| R169,170 | ER0S2TKG1802 | 18K |
| R171,172 | ER0S2TKG1602 | 16K |
| R173,174 | ER0S2TKG3601 | 3.6K |
| R175,176 | ERDS2TJ333 | 33K |
| R177 | ERDS2TJ102 | 1K |
| R178 | ERDS2TJ472 | 4.7K |
| R185 | ERDS2TJ472 | 4.7K |
| R186 | ERDS2TJ471 | 470 |
| R187 | ERDS2TJ561 | 560 |
| R188,189 | ERDS2TJ103 | 10K |
| R190 | ERDS2TJ271 | 270 |
| R191 | ERDS2TJ472 | 4.7K |
| R192,193 | ERDS2TJ103 | 10K |
| R195 | ERDS2TJ103 | 10K |
| R196 | ERDS2TJ472 | 4.7K |
| R197 | ERDS2TJ332 | 3.3K |
| R198 | ERDS2TJ471 | 470 |
| R199 | ERDS2TJ472 | 4.7K |
| R200 | ERDS2TJ102 | 1K |
| R201 | ERDS2TJ472 | 4.7K |
| R202 | ERDS2TJ102 | 1K |
| R203 | ERDS2TJ472 | 4.7K |
| R204 | ERDS2TJ102 | 1K |
| R205 | ERDS2TJ102 | 1K |
| R206,207 | ERDS2TJ271 | 270 |
| R208 | ERDS2TJ102 | 1K |
| R209 | ERDS2TJ472 | 4.7K |
| R210 | ERDS2TJ103 | 10K |
| R211,212 | ER0S2TKG5102 | 51K |
| R213 | ERDS2TJ333 | 33K |
| R214 | ER0S2TKG3902 | 39K |
| R215,216 | ERDS2TJ472 | 4.7K |
| R217 | ERDS2TJ104 | 100K |
| R218 | ERDS2TJ474 | 470K |
| R219,220 | ERDS2TJ433 | 43K |
| R221,222 | ERDS2TJ682 | 6.8K |
| R223,224 | ERDS2TJ473 | 47K |
| R225 | ERDS2TJ473 | 47K |
| R226,227 | ERDS2TJ223 | 22K |
| R228,229 | ERDS2TJ472 | 4.7K |
| R230 | ERDS2TJ472 | 4.7K |
| R231 | ERDS2TJ474 | 470K |
| R232 | ERDS2TJ123 | 12K |
| R233 | ERDS2TJ472 | 4.7K |
| R234 | ERDS2TJ474 | 470K |
| R235 | ERDS2TJ103 | 10K |
| R236 | ERDS2TJ472 | 4.7K |
| R237 | ERDS2TJ104 | 100K |
| R238 | ERDS2TJ472 | 4.7K |
| R239 | ERDS2TJ104 | 100K |
| R241 | ERDS2TJ104 | 100K |
| R242 | ERDS2TJ473 | 47K |
| R253 | ERDS2TJ103 | 10K |
| R255,256 | ERDS2TJ561 | 560 |
| R257,258 | ERDS2TJ473 | 47K |
| R259,260 | ERDS2TJ221 | 220 |
| R261,262 | ERDS2TJ332 | 3.3K |
| R263,264 | ERDS2TJ332 | 3.3K |
| R265,266 | ERDS2TJ332 | 3.3K |
| R267,268 | ERDS2TJ223 | 22K |
| R269,270 | ERDS2TJ221 | 220 |
| R271,272 | ERDS2TJ103 | 10K |
| R273,274 | ERDS2TJ104 | 100K |
| R275 | ERDS2TJ102 | 1K |
| R276 | ERDS2TJ561 | 560 |
| R281,282 | ERDS2TJ104 | 100K |
| R283,284 | ERDS2TJ123 | 12K |
| R285,286 | ERDS2TJ123 | 12K |
| R287,288 | ERDS2TJ223 | 22K |
| R289,290 | RDS2TJ223 | 22K |
| R291,292 | ERDS2TJ820 | 82 |
| R293,294 | ERDS2TJ820 | 82 |
| R301 | ERDS2TJ820 | 82 |
| R302 | ERDS2TJ472 | 4.7K |
| R303 | ERDS2TJ223 | 22K |
| R304 | ERDS2TJ472 | 4.7K |
| R305 | ERDS2TJ222 | 2.2K |
| R306 | ERDS2TJ272 | 2.7K |
| R307 | ERDS2TJ102 | 1K |
| R308 | ERDS2TJ102 | 1K |
| R309 | ERDS2TJ472 | 4.7K |
| R310 | ERDS2TJ472 | 4.7K |
| R311 | ERDS2TJ393 | 39K |
| R312 | ERDS2TJ472 | 4.7K |
| R313 | ERDS2TJ122 | 1.2K |
| R314 | ERDS2TJ272 | 2.7K |
| R315 | ERDS2TJ183 | 18K |
| R316 | ERDS2TJ472 | 4.7K |
| R317 | ERDS2TJ153 | 15K |
| R318 | ERDS2TJ680 | 68 |
| R319 | ERDS2TJ472 | 4.7K |
| R320 | ERDS2TJ153 | 15K |
| R321 | ERDS2TJ472 | 4.7K |
| R322 | ERDS2TJ822 | 8.2K |
| R323 | ERDS2TJ682 | 6.8K |
| R324 | ERDS2TJ153 | 15K |
| R325 | ERDS2TJ223 | 22K |
| R326 | ERDS2TJ472 | 4.7K |
| R327 | ERDS2TJ472 | 4.7K |
| R328 | ERDS2TJ223 | 22K |
| R329 | ERDS2TJ153 | 15K |
| R330 | ERDS2TJ153 | 15K |
| R331 | ERDS2TJ102 | 1K |
| R332 | ERDS2TJ102 | 1K |
| R333 | ERDS2TJ273 | 27K |
| R334 | ERDS2TJ822 | 8.2K |
| R335 | ERDS2TJ392 | 3.9K |
| R336 | ERDS2TJ272 | 2.7K |

| Ref. No. | Part No. | Value |
|---|---|---|
| R337 | ERDS2TJ102 | 1K |
| R338 | ERDS2TJ102 | 1K |
| R339 | ERDS2TJ102 | 1K |
| R340 | ERDS2TJ102 | 1K |
| R341 | ERDS2TJ103 | 10K |
| R342 | ERDS2TJ103 | 10K |
| R343 | ERDS2TJ102 | 1K |
| R344 | ERDS2TJ153 | 15K |
| R345 | ERDS2TJ153 | 15K |
| R346 | ERDS2TJ123 | 12K |
| R347 | ERDS2TJ103 | 10K |
| R349 | ERDS2TJ102 | 1K |
| R350 | ERDS2TJ473 | 47K |
| R353 | ERDS2TJ153 | 15K |
| R354 | ERDS2TJ103 | 10K |
| R355 | ERDS2TJ103 | 10K |
| R356 | ERDS2TJ122 | 1.2K |
| R357 | ERDS2TJ102 | 1K |
| R358 | ERDS2TJ122 | 1.2K |
| R359 | ERDS2TJ152 | 1.5K |
| R360 | ERDS2TJ153 | 15K |
| R361 | ERDS2TJ104 | 100K |
| R362 | ERDS2TJ123 | 12K |
| R363 | ERDS2TJ103 | 10K |
| R364 | ERDS2TJ103 | 10K |
| R365 | ERDS2TJ103 | 10K |
| R366 | ERDS2TJ103 | 10K |
| R367 | ER0S2TKG1002 | 10K |
| R368 | ER0S2TKG1002 | 10K |
| R369 | ER0S2TKG1002 | 10K |

| Ref. No. | Part No. | Value |
|---|---|---|
| R370 | ER0S2TKG1002 | 10K |
| R371 | ERDS2TJ221 | 220 |
| R372 | ERDS2TJ221 | 220 |
| R373 | ER0S2TKG1002 | 10K |
| R374 | ER0S2TKG1002 | 10K |
| R375 | ER0S2TKG1002 | 10K |
| R376 | ER0S2TKG1002 | 10K |
| R377 | ER0S2TKG2002 | 20K |
| R378 | ER0S2TKG2002 | 20K |
| R379 | ER0S2TKG2401 | 2.4K |
| R380 | ER0S2TKG2401 | 2.4K |
| R381 | ER0S2TKG1302 | 13K |
| R382 | ER0S2TKG1302 | 13K |
| R383 | ER0S2TKG1302 | 13K |
| R384 | ER0S2TKG1302 | 13K |
| R385 | ER0S2TKG5101 | 5.1K |
| R386 | ER0S2TKG5101 | 5.1K |
| R387 | ERDS2TJ221 | 220 |
| R388 | ERDS2TJ332 | 3.3K |
| R389 | ERDS2TJ332 | 3.3K |
| R390 | ERDS2TJ102 | 1K |
| R391 | ERDS2TJ332 | 3.3K |
| R392 | ERDS2TJ332 | 3.3K |
| R393 | ERDS2TJ472 | 4.7K |
| R394 | ERDS2TJ473 | 47K |
| R395 | ERDS2TJ472 | 4.7K |
| R396 | ERDS2TJ221 | 220 |
| R397 | ERDS2TJ103 | 10K |
| R398 | ERDS2TJ472 | 4.7K |
| R399 | ERDS2TJ472 | 4.7K |
| R401 Ⓢ | ERD25FJ102 | 1K |
| R402 Ⓢ | ERD25FJ102 | 1K |
| R403 Ⓢ | ERD25TJ333 | 33K |

| Ref. No. | Part No. | Value |
|---|---|---|
| R404 Ⓢ | ERD25TJ333 | 33K |
| R405 Ⓢ | ERD25TJ224 | 220K |
| R408 Ⓢ | ERD25FJ103 | 10K |
| R501 | ERDS2TJ393 | 39K |
| R502 | ERDS2TJ393 | 39K |
| R503 | ERDS2TJ223 | 22K |
| R504 | ERDS2TJ103 | 10K |
| R505 | ERDS2TJ182 | 1.8K |
| R506 | ERDS2TJ473 | 47K |
| R507 | ERDS2TJ102 | 1K |
| R508 | ERDS2TJ102 | 1K |
| R509 | ERDS2TJ102 | 1K |
| R510 | ERDS2TJ223 | 22K |
| R511 | ERDS2TJ223 | 22K |
| R512 | ERDS2TJ103 | 10K |
| R513 | ERDS2TJ103 | 10K |
| R514 | ERDS2TJ123 | 12K |
| R515 | ERDS2TJ223 | 22K |
| R516 | ERDS2TJ102 | 1K |
| R517 | ERDS2TJ562 | 5.6K |
| R520 | ERDS2TJ473 | 47K |
| R521 | ER0S2TKG4640 | 464 |
| R522 | ER0S2TKG2800 | 280 |
| R523 | ER0S2TKG6340 | 634 |
| R524 | ER0S2TKG1101 | 1.1K |
| R525 | ER0S2TKG1000 | 100 |
| R526 | ER0S2TKG2431 | 2.43K |
| R527 | ERDS2TJ102 | 1K |
| R528 | ERDS2TJ121 | 120 |
| R529 | ERDS2TJ121 | 120 |
| R530 | ERDS2TJ121 | 120 |
| R531 | ERDS2TJ121 | 120 |
| R532 | ERDS2TJ104 | 100K |

| Ref. No. | Part No. | Value |
|---|---|---|
| R533 | ERDS2TJ104 | 100K |
| R534 | ERDS2TJ102 | 1K |
| R537 | ERDS2TJ472 | 4.7K |
| R538 | ERDS2TJ472 | 4.7K |
| R541 | ERDS2TJ222 | 2.2K |
| R542 | ERDS2TJ123 | 12K |
| R543 | ERDS2TJ102 | 1K |
| R545 | ERDS2TJ105 | 1M |
| R546 | ERDS2TJ470 | 47 |
| R547 | ERDS2TJ332 | 3.3K |
| R548 | ERDS2TJ563 | 56K |
| R549 | ERDS2TJ332 | 3.3K |
| R550 | ERDS2TJ563 | 56K |
| R551 | ERDS2TJ332 | 3.3K |
| R552 | ERDS2TJ563 | 56K |
| R553 | ERDS2TJ103 | 10K |
| R554 | ERDS2TJ473 | 47K |
| R555 | ERDS2TJ472 | 4.7K |
| R557 | ERDS2TJ154 | 150K |
| R561 | ERDS2TJ472 | 4.7K |
| R562 | ERDS2TJ561 | 560 |
| R563 | ERDS2TJ103 | 10K |
| R564 | ERDS2TJ473 | 47K |
| R565 | ERDS2TJ473 | 47K |
| R601,602 | ERDS2TJ221 | 220 |
| R631,632 | ERDS2TJ472 | 4.7K |
| R633,634 | ERDS2TJ472 | 4.7K |
| R635 | ERDS2TJ472 | 4.7K |
| R636 | ERDS2TJ681 | 680 |
| R637 | ERDS2TJ471 | 470 |
| R638 | ERDS2TJ681 | 680 |

## ● CAPACITORS

| Ref. No. | Part No. | Value |
|---|---|---|
| C1 ⚠ | ECKDMY103PF | 0.01 |
| C101,102 Ⓢ | ECKD1H473ZF | 0.047 |
| C103 Ⓢ | ECEA1VU332 | 3300 |
| C104,105 Ⓢ | ECKD1H473ZF | 0.047 |
| C106 Ⓢ | ECEA1VU332 | 3300 |
| C107,108 Ⓢ | ECKD1H473ZF | 0.047 |
| C109 | ECES1CV223Y | 22000 |
| C110 Ⓢ | ECEA1CU331B | 330 |
| C111 Ⓢ | ECEA1EU221 | 220 |
| C112 Ⓢ | ECEA1CU331B | 330 |
| C113 Ⓢ | ECEA0JU101 | 100 |
| C114 Ⓢ | ECEA0JU102B | 1000 |
| C120,122 ⚠ | ECKDAL102Z-T | 0.001 |
| C124,125 ⚠ | ECKDMY103PF | 0.01 |
| C128 ⚠Ⓢ | ECKD1H473ZF | 0.047 |
| C130,131 Ⓢ | ECEA1HUR47 | 0.47 |
| C132 Ⓢ | ECEA1HUR47 | 0.47 |
| C151,152 ⚠Ⓢ | ECEA1CN100S | 10 |
| C153,154 | ECQP1392GZ | 0.0039 |
| C155,156 Ⓢ | ECCD1H331K | 330P |
| C157,158 Ⓢ | ECQM1H104JZ | 0.1 |
| C159,160 | ECQP1122GZ | 0.0012 |
| C161,162 Ⓢ | ECCD1H470K | 47P |
| C163,164 | ECQP1392GZ | 0.0039 |
| C165,166 ⚠Ⓢ | ECEA1CN100S | 10 |
| C171,172 Ⓢ | ECEA1CU331B | 330 |
| C173,174 Ⓢ | ECEA1HU3R3 | 3.3 |
| C193 Ⓢ | ECEA0JU470 | 47 |
| C194 Ⓢ | ECEA0JU471 | 470 |
| C195,196 Ⓢ | ECKD1H103MD | 0.01 |
| C197,198 Ⓢ | ECKD1H103MD | 0.01 |
| C199 Ⓢ | ECEA1AU220 | 22 |
| C211,212 ⚠Ⓢ | ECEA1HN2R2S | 2.2 |
| C213,214 Ⓢ | ECEA25M10R | 10 |
| C215 Ⓢ | ECEA1HU010 | 1 |
| C216 Ⓢ | ECEA1CU470 | 47 |
| C217 Ⓢ | ECQM1H473JZ | 0.047 |
| C218 | ECEA1EU101 | 100 |

| Ref. No. | Part No. | Value |
|---|---|---|
| C255,256 ⚠Ⓢ | ECEA1CN100S | 10 |
| C257,258 Ⓢ | ECCD1H101K | 100P |
| C259,260 Ⓢ | ECKD1H103MD | 0.01 |
| C261,262 Ⓢ | ECEA0JU101 | 100 |
| C263,264 Ⓢ | ECCD1H101K | 100P |
| C265,266 ⚠ Ⓢ | ECEA1CN100S | 10 |
| C267 Ⓢ | ECEA1CU331B | 330 |
| C268,269 Ⓢ | ECEA1CU221 | 220 |
| C270 Ⓢ | ECEA1CU221 | 220 |
| C281,282 Ⓢ | ECCD1H101K | 100P |
| C283,284 Ⓢ | ECCD1H101K | 100P |
| C285,286 ⚠ Ⓢ | ECEA1HN010S | 1 |
| C287 ⚠ Ⓢ | ECEA1CN100S | 10 |
| C301 Ⓢ | ECEA1CU220 | 22 |
| C302 Ⓢ | ECEA1CU220 | 22 |
| C303 Ⓢ | ECEA1CU220 | 22 |
| C304 Ⓢ | ECCD1H470K | 47P |
| C305 Ⓢ | ECEA1HU2R2 | 2.2 |
| C306 Ⓢ | ECCD1H181K | 180P |
| C307 Ⓢ | ECQM1H122JZ | 0.0012 |
| C308 Ⓢ | ECCD1H561K | 560P |
| C309 Ⓢ | ECCD1H101K | 100P |
| C310 ⚠ Ⓢ | ECEA1HN010S | 1 |
| C312 Ⓢ | ECQM1H332JZ | 0.0033 |
| C313 Ⓢ | ECEA0JU330 | 33 |
| C314 Ⓢ | ECEA1EU4R7 | 4.7 |
| C320 Ⓢ | ECQM1H103JZ | 0.01 |
| C321 Ⓢ | ECKD1H473ZF | 0.047 |
| C322 Ⓢ | ECKD1H473ZF | 0.047 |
| C324 Ⓢ | ECKD1H473ZF | 0.047 |
| C325 Ⓢ | ECKD1H473ZF | 0.047 |
| C336 | ECCD1H681J | 680P |
| C364 Ⓢ | ECCD1H101K | 100P |
| C365 ⚠ Ⓢ | ECEA1CN101S | 100 |
| C366 ⚠ Ⓢ | ECEA1CN101S | 100 |
| C367 Ⓢ | ECCD1H471K | 470P |
| C368 Ⓢ | ECCD1H471K | 470P |
| C369 Ⓢ | ECCD1H151K | 150P |
| C370 Ⓢ | ECCD1H151K | 150P |

| Ref. No. | Part No. | Value |
|---|---|---|
| C371 | ECQP1102GZ | 0.001 |
| C372 | ECQP1102GZ | 0.001 |
| C373 Ⓢ | ECCD1H471K | 470P |
| C374 Ⓢ | ECCD1H471K | 470P |
| C375 Ⓢ | ECCD1H820K | 82P |
| C376 Ⓢ | ECCD1H820K | 82P |
| C377 | ECQP1392GZ | 0.0039 |
| C378 | ECQP1392GZ | 0.0039 |
| C379 Ⓢ | ECCD1H220K | 22P |
| C380 Ⓢ | ECEA1CU101 | 100 |
| C381 Ⓢ | ECEA1CU101 | 100 |
| C382 Ⓢ | ECEA0JU331 | 330 |
| C383 Ⓢ | ECEA1AU221 | 220 |
| C384 Ⓢ | ECEA0JU331 | 330 |
| C385 Ⓢ | ECKD1H473ZF | 0.047 |
| C388 Ⓢ | ECEA1EU470 | 47 |
| C389 Ⓢ | ECEA1EU470 | 47 |
| C390 Ⓢ | ECEA0JU331 | 330 |
| C391 Ⓢ | ECEA0JU331 | 330 |
| C401 Ⓢ | ECKD1H473ZF | 0.047 |
| C402 Ⓢ | ECKD1H102KB | 0.001 |
| C403 Ⓢ | ECKD1H102KB | 0.001 |
| C404 Ⓢ | ECKD1H473ZF | 0.047 |
| C405 Ⓢ | ECKD1H473ZF | 0.047 |
| C406 Ⓢ | ECKD1H473ZF | 0.047 |
| C407 Ⓢ | ECCD1H470K | 47P |
| C408 Ⓢ | ECCD1H470K | 47P |
| C409 Ⓢ | ECKD1H473ZF | 0.047 |
| C410 Ⓢ | ECKD1H473ZF | 0.047 |
| C411 Ⓢ | ECKD1H473ZF | 0.047 |
| C412 Ⓢ | ECEB0JS102 | 1000 |
| C414 Ⓢ | ECCD1H391KZ | 390P |
| C501 Ⓢ | ECQM1H103JZ | 0.01 |
| C502 Ⓢ | ECEA1EU3R3 | 3.3 |
| C503 Ⓢ | ECQM1H102JZ | 0.001 |
| C504 Ⓢ | ECQM1H102JZ | 0.001 |
| C505 Ⓢ | ECQM1H103JZ | 0.01 |

| Ref. No. | Part No. | Value |
|---|---|---|
| C506 Ⓢ | ECCD1H101K | 100P |
| C507 Ⓢ | ECCD1H101K | 100P |
| C508 Ⓢ | ECQM1H104JZ | 0.1 |
| C509 Ⓢ | ECQM1H104JZ | 0.1 |
| C510 Ⓢ | ECQM1H104JZ | 0.1 |
| C511 Ⓢ | ECQM1H104JZ | 0.1 |
| C514 Ⓢ | ECKD1H473ZF | 0.047 |
| C515 Ⓢ | ECEA0JU101 | 100 |
| C516 Ⓢ | ECEA0JU471 | 470 |
| C517 Ⓢ | ECKD1H473ZF | 0.047 |
| C518 Ⓢ | ECEA0JU471 | 470 |
| C519 Ⓢ | ECKD1H473ZF | 0.047 |
| C520 Ⓢ | ECEA1HU010 | 1 |
| C523 Ⓢ | ECKD1H473ZF | 0.047 |
| C524 Ⓢ | ECEA0JU221 | 220 |
| C525 Ⓢ | ECKD1H473ZF | 0.047 |
| C526 Ⓢ | ECKD1H473ZF | 0.047 |
| C527,528 Ⓢ | ECKD1H473ZF | 0.047 |
| C531 Ⓢ | ECEA0JU471 | 470 |
| C532 Ⓢ | ECEA0JU471 | 470 |
| C541 Ⓢ | ECQM1H103JZ | 0.01 |
| C542 Ⓢ | ECEA1CU100 | 10 |
| C543 Ⓢ | ECKD1H104ZF | 0.1 |
| C544 Ⓢ | ECKD1H104ZF | 0.1 |
| C546 Ⓢ | ECCD1H680K | 68P |
| C547 Ⓢ | ECCD1H070CC | 7P |
| C548 Ⓢ | ECCD1H070CC | 7P |
| C549 Ⓢ | ECCD1H070CC | 7P |
| C550 Ⓢ | ECCD1H070CC | 7P |
| C551 Ⓢ | ECQM1H102JZ | 0.001 |
| C552 Ⓢ | ECQM1H272JZ | 0.0027 |
| C554 Ⓢ | ECEA1CU100 | 10 |
| C555 Ⓢ | ECQM1H223JZ | 0.022 |
| C557 | ECQP1123JZ | 0.012 |
| C601,602 ⚠ Ⓢ | ECEA1CN100S | 10 |
| C603,604 Ⓢ | ECQM1H332JZ | 0.0033 |
| C641 ⚠ Ⓢ | ECEA1CN100S | 10 |

# ■ REPLACEMENT PARTS LIST

**Notes:**
1. Part numbers are indicated on most mechanical parts. Please use this part number for parts orders.
2. Important safety notice: Components identified by ⚠ mark have special characteristics important for safety. When replacing any of these components use only manufacturer's specified parts.
3. Bracketed indications in Ref. No. columns specify the area. Parts without these indications can be used for all areas.
4. The "Ⓢ" mark is service standard parts and may differ from production parts.
5. The perenthesized numbers in column of description stand for the quality per set.

**Areas**

* [M] is available in U.S.A.
* [MC] is available in Canada.

| Ref. No. | Part No. | Description |
|---|---|---|
| **INTEGRATED CIRCUITS** | | |
| IC101 | AN78M20 | Regulator,+20V |
| IC102 | AN78M05 | Regulator,+5V |
| IC130 | AN78M15 | Regulator,+15V |
| IC131 | AN78M12 | Regulator,+12V |
| IC132 | AN7805 | Regulator,+5V |
| IC151,153,154 | SVINJ4559DDM | Pri-emphasis, Buffer |
| IC155,156 | MN6631 | Analog Switch |
| IC191 | MN1420PCF | Micro Computer |
| IC192 | MN4001B | NOR Gate |
| IC193 | MN4040B | 12-Bit Binaly Counter |
| IC194 | MN4013B | D Flip Flop |
| IC211,212 | AN6552F | Buffer |
| IC213 | SVIUPD4066BC | Quad Bilateral Switch |
| IC214 | AN6870N | Display Drive |
| IC255 | SVINJ4559DDM | Microphone Amprifier |
| IC281,282 | SVINJM4556S | Head-phone Amprifier |
| IC302 | DN74LS123 | Multivibrator |
| IC303 | DN74LS74A or SVIHD74LS74P | D Flip Flop |
| IC305 | DN74LS00 or SVIHD74LS00P | NAND Gate |
| IC308,309 | SVITL082CP | Operational Amp. |
| IC310 | AN6552F | Comparator |
| IC311 | AN6914 | Comparator |
| IC312,313 | SVITL810CP | Operational Amp. |
| IC365,366 | SVITL082CP | Operational Amp. |
| IC367,368 | SVIUPD4066BC | Quad Bilateral Switch |
| IC369 | SVITL082CP | Operational Amp. |
| IC370,371 | SVIUPD4066BC | Quad Bilateral Switch |
| IC372 | DN74LS126A or SVIHD74LS126 | Buffer |
| IC373,374 | DN74LS74A or SVIHD74LS74P | D Flip Flop |
| IC375 | EHKMA6196 | D-A/A-D Converter |
| IC377,378 | SVITL082CP | Operational Amp. |
| IC379 | DN74LS02 | NOR Gate |
| IC401 | MN6603 | REC/PB Control |
| IC402,404 | DN74LS74A or SVIHD74LS74P | D Flip Flop |
| IC403 | DN74LS04 | Inverter |
| IC405 | DN74LS125A or SVIHD74LS125 | Buffer Gate |
| IC406 | DN74LS123 | Multivibrator |
| IC407 | DN74LS86 or SVIHD74LS86P | Exclusive OR Gate |
| IC408 | MN6602 | PB Control |
| IC409 | MN6601 | REC Control |
| IC410,411 | SVIHM6116P-4 | Randam Access Memory |
| IC412 | DN74LS161A or SVIHD74LS161 | 4-Bit Binary Counter |
| IC413 | DN74LS74A or SVIHD74LS74P | D Flip Flop |

| Ref. No. | Part No. | Description |
|---|---|---|
| **INTEGRATED CIRCUITS** | | |
| IC414 | DN74LS02 | NOR Gate |
| IC415 | DN74LS161A or SVIHD74LS161 | 4-Bit Binary Counter |
| IC416 | DN74LS74A or SVIHD74LS74P | D Flip Flop |
| IC417,418 | SVIHM6116P-4 | Randam Access Memory |
| IC420 | DN74LS123 | Multivibrator |
| IC421 | DN74LS126A or SVIHD74LS126 | Buffer |
| IC501 | DN74LS02 | NOR Gate |
| IC502 | DN74LS123 | Multivibrator |
| IC503 | DN74LS00 or SVIHD74LS00P | NAND Gate |
| IC504,505 | DN74LS123 | Multivibrator |
| IC506 | DN74LS02 | NOR Gate |
| IC507 | DN74LS74A or SVIHD74LS74P | D Flip Flop |
| IC508 | DN74LS00 or SVIHD74LS00P | NAND Gate |
| IC509 | MN1542PCK | Micro Computer |
| IC510 | DN74LS157 | Multiplexer |
| IC511 | SVISN74LS393 | 4Bit Binary Counter |
| IC512 | SVITL082CP | Operational Amp. |
| IC513 | SVIUPD4066BC | Quad Bilateral Switch |
| IC514 | SVITC40H004P | Inverter |
| IC515 | SVITL082CP | Operational Amp. |
| IC516 | SVINJ4559DDM | Operational Amp. |
| IC517~520 | DN74LS74A or SVIHD74LS74P | D Flip Flop |
| IC521 | DN74LS00 or SVIHD74LS00P | NAND Gate |
| IC522 | DN74LS126A or SVIHD74LS126 | Buffer |
| IC524 | DN74LS04 | Inverter |
| **TRANSISTORS** | | |
| Q101,102 | 2SD636 | Muting Circuit |
| Q103 | 2SB641 | Muting Circuit |
| Q104 | 2SD636 | Muting Circuit |
| Q105 | 2SB641 | Muting Circuit |
| Q151 | 2SD636 | L.E.D.Drive |
| Q191 | 2SB641 | Switching |
| Q192,193 | 2SD636 | Switching |
| Q194,195 | 2SD636 | Switching |
| Q211,212 | 2SD636 | Buffer |
| Q213,214 | 2SD636 | Buffer |
| Q215 | 2SD636 | Buffer |
| Q216 | 2SB641 | Switching |
| Q217 | 2SD636 | Switching |
| Q218 | 2SB641 | Switching |
| Q255,256 | 2SC2385-G | Microphone Amprifier |
| Q257,258 | 2SC2385-G | Microphone Amprifier |
| Q301 | 2SC2377 | Buffer |
| Q302,303 | 2SD636 | Input Amp. |
| Q304 | 2SC2377 | Input Amp. |

| Ref. No. | Part No. | Description |
|---|---|---|
| **TRANSISTORS** | | |
| Q305,306 | 2SD636 | Input Amp. & CSYNC Spearator |
| Q307,308 | 2SB641 | C SYNC Separator |
| Q309 | 2SD636 | Switching |
| Q310 | 2SB641 | FET Driver |
| Q311 | 2SK301 | Switching |
| Q313 | 2SD636 | Switching |
| Q365 | 2SD636 | Switching |
| Q501,502 | 2SD636 | Video Amp. |
| Q503 | 2SB641 | Video Amp. |
| Q504 | 2SD636 | Video Amp. |
| Q505,506 | 2SB641 | Video Amp. & Switching |
| Q507,508 | 2SB641 | Switching |
| Q510 | 2SB641 | Switching |
| **DIODES** | | |
| D101,102 ⚠ | SVDS1WB10 | Rectifier |
| D103 ⚠ | SVDS4VB10 | Rectifier |
| D104 | MA4075 | 7.5V,Zener |
| D105 | MA4056 | 5.6V,Zener |
| D106,107 Ⓢ | MA162A | Switching |
| D151 | MA165 | Switching |
| D191 | MA165 | Switching |
| D193 | MA165 | Switching |
| D211,212 | MA165 | Switching |
| D213 | MA4068 | 6.8V,Zener |
| D214,215 Ⓢ | MA26TO-A | Switching |
| D216,217 | MA165 | Switching |
| D255 | MA165 | Switching |
| D301,302 | MA165 | Switching |
| D303,304 | MA165 | Switching |
| D305,306 | MA165 | Switching |
| D307,308 | MA165 | Switching |
| D365,366 | MA165 | Switching |
| D367 | MA4051 | 5.1V,Zener |
| D501 Ⓢ | MA26TO-A | Switching |
| D502 | SVDKV1236Z | Variable Capactitor Diode |
| D503 | MA165 | Switching |
| D611,612 | LN0401GP3 | System Indicator |
| D613,614 | SVDLD-101MG | System Indicator |
| D631,633 | LN229RP | REC/COPY Indicator |
| D632 | LN329GP | PBMUTE Indicator |
| **OSCILLATORS** | | |
| X401 | SVQ43U1586 | Crystal,15.86MHz |
| X501,502 | EF0A4R0M01A | Ceramic,4MHz |
| **COILS and TRANSFORMERS** | | |
| L120 | ELF18D112 | Line Filter |
| L301 | ELB5F7 | Low Pass Filter |
| L302 | ELB5G038 | Delay Line |
| L501,502 | SLQ0930T300C | Balun Coil |
| L503~506 | ELEH100JA | Choke |
| LPF151,152 | EULBPF304 | Low Pass Filter |
| T1 ⚠ | SLTF6244 | Power Source |

| Ref. No. | Part No. | Description |
|---|---|---|
| **VARIABLE RESISTORS** | | |
| VR151 | EWGGDA510375 | Recording Balance |
| VR152 | EWJKDA016A15 | Recording Level |
| VR211 | EVN38CA00B24 | Balance Adjustment 20kΩ(B) |
| VR212 | EVN38CA00B16 | Recovery Time Adjustment 100kΩ(B) |
| VR213 | EVN38CA00B14 | 0dB Adjustment 10kΩ(B) |

| Ref. No. | Part No. | Description |
|---|---|---|
| **VARIABLE RESISTORS** | | |
| VR255 | EWCSNAF15AF5 | Head Phone Level |
| VR365,366 | EVN38CA00B24 | Offset Adjustment 20kΩ(B) |
| VR501 | EVN38CA00B53 | 5kΩ(B) |
| VR502,503 | EVN38CA00B14 | 10kΩ(B) |
| VR504 | EVMG0GA01B54 | 50kΩ(B) |
| **FLUORESCENT DISPLAY TUBE** | | |
| FL201 | SSDQBG193Z | Level/Tracking Indication |
| **RELAY** | | |
| RLY151,260 | SFDYQ11N02 | Muting |

| Ref. No. | Part No. | Description |
|---|---|---|
| **SWITCHES** | | |
| S1 ⚠ | ESB8213V | Power Switch |
| S621 | SSDS2K4KB1X | Master Switch, Playback Mode Switch |
| S631 | EVQQJ104K | Recording Muting |
| S632 | EVQQJ104K | Peak Hold |
| S633 | EVQQJ104K | Tracking |
| S634 | EVQQJ104K | Copy |
| S635 | EVQQJ104K | Playback Muting |
| **FUSE** | | |
| F120 ⚠ | XBA1F10NU14 | 1A,125V |

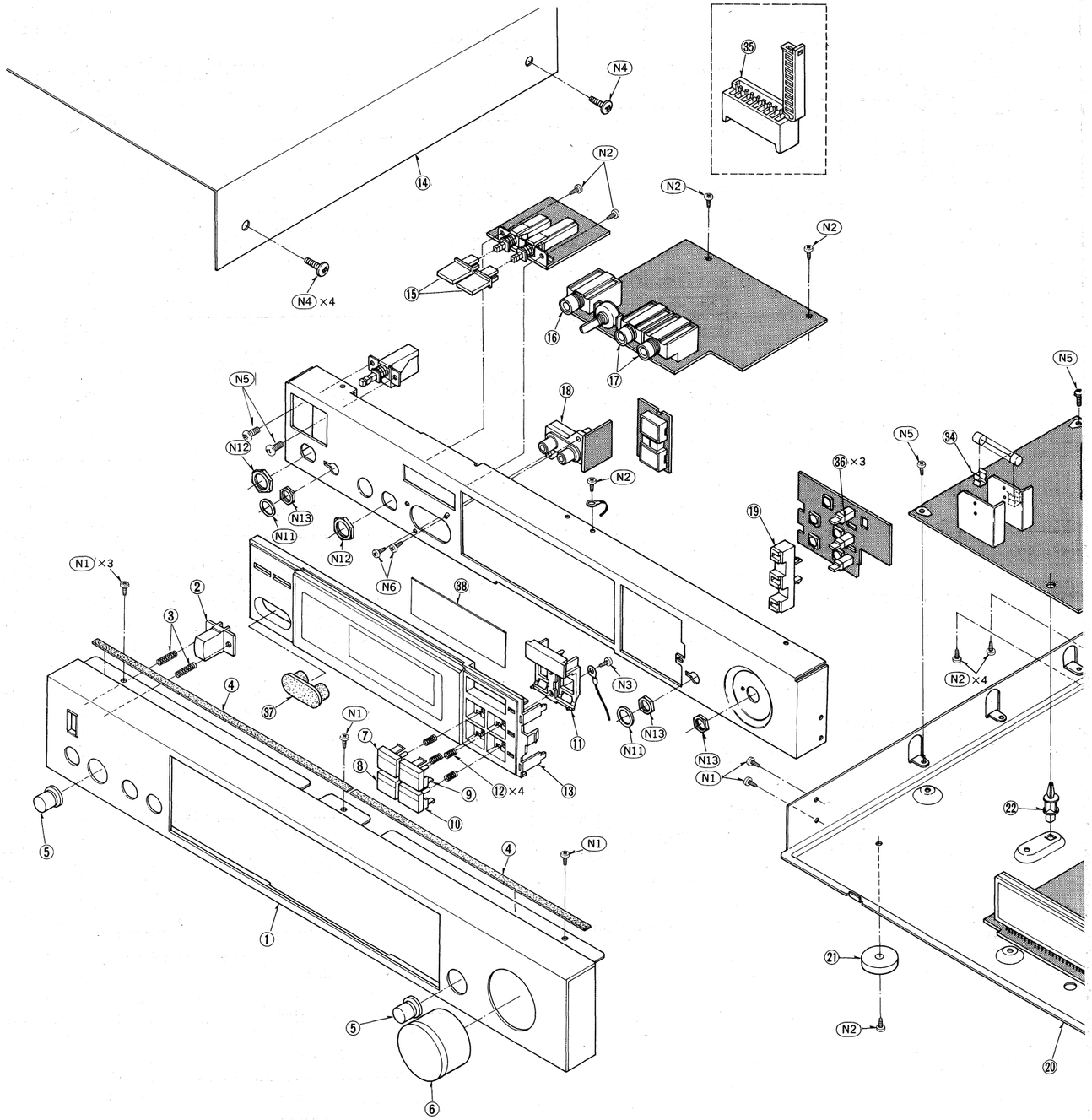
| Ref. No. | Part No. | Description |
|---|---|---|
| **CABINET AND CHASSIS PARTS** | | |
| 1 | SSBP110N01E | Front Panel,with Power Switch Button (1) |
| 2 | SBC261-1 | Button,Power Switch (1) |
| 3 | SUS193 | Spring,Power Switch Button (2) |
| 4 | SSUZ110N03 | Sheet (2) |
| 5 | SBN947-1 | Knob,Recording Balance/Phones Level (2) |
| 6 | SBN943-1 | Knob,Recording Level (1) |
| 7 | SSKT110N07 | Button,Peak Hold (1) |
| 8 | SSKT110N09 | Button,Tracking (1) |
| 9 | SSKT110N08 | Button,PB Mute (1) |
| 10 | SSKT110N10 | Button,Copy (1) |
| 11 | SSKT110N02 | Button,REC Mute (1) |
| 12 | SSQA110N01 | Spring,Buttons (4) |
| 13 | SSUM110N01E | Sub Panel (1) |
| 14 | SSUP110N03 | Cabinet (1) |
| 15 | SBC315-4 | Button,PB Mode/Master VTR Selector (2) |
| 16 | SSDJ3315020 | Jack,Head Phone (1) |
| 17 | SSDJ3315010 | Jack,Microphone (2) |
| 18 | SJF3225N | Terminal Plate,Video Input/Output (1) |
| 19 | SSUM110N02 | Holder,L.E.D. (1) |
| 20 | SSUP110N01 | Bottom Board (1) |
| 21 | SKL117-1 | Foot (4) |
| 22 | SSUM110N03 | Spacer,P.C.B. (2) |
| 23 | SFDBC07-01 | Bushing,Regulator IC (3) |
| 24 | SFDCC07-01 | Insulator, Regulator IC (3) |
| 25 | SSUM110N04 | Clamper,Lead Wires (2) |
| 26 ⚠ | SFDJHSC0491 | Jack,AC IN (1) |

| Ref. No. | Part No. | Description |
|---|---|---|
| **CABINET AND CHASSIS PARTS** | | |
| 27 | SRNZ010M03 | Label,AC IN (1) |
| **28** (M) | SSNN110M01 | Name Plate (1) |
| **28** (MC) | SSNN110C01 | Name Plate (1) |
| 29 | SSUZ101N01 | Sheet (1) |
| 30 | SJF3059-4N | Terminal Plate, Line Input/Output, Video Input/Output, Monitor Output (1) |
| 31 | SSUM101N08 | Latch,P.C.B. (2) |
| 32 | SSUM110N08 | Bracket (1) |
| 34 | SJT345 | Holder,Fuse (2) |
| **35** | SFDJW-D0603 | Connector(3pin) (2) |
| **35** | SFDJW-D0605 | Connector(5pin) (1) |
| **35** | SFDJW-D0606 | Connector(6pin) (1) |
| 36 | SSGZ110N01 | Spacer,L.E.D. (3) |
| 37 | SSGK110N11 | Cap,Video Input/Output Terminal (1) |
| 38 | SSKK110N02 | Filter (1) |
| 39 | SSDC110N01 | Sheet. (1) |
| **SCREWS,WASHERS AND NUTS** | | |
| N1 Ⓢ | XTN3+6B | Screw,Front Panel (7) |
| N2 Ⓢ | XTV3+6BFZ | Screw,P.C.Board, Power Transformer, Foot (17) |
| N3 Ⓢ | XTV3+6BFZ | Screw,Rec Mute Button (1) |
| N4 Ⓢ | XTB4+8BFN | Screw,Cabinet (4) |
| N5 | SRXG010N12 | Screw,Power Switch P.C.Board,Heat Sink,A.C.Socket (7) |
| N6 Ⓢ | XTV3+8BFZ | Screw,Terminal Plate (4) |
| N7 | XTN3+55J | Screw,P.C.Board (2) |

| Ref. No. | Part No. | Description |
|---|---|---|
| **SCREWS,WASHERS AND NUTS** | | |
| N8 Ⓢ | XTV3+6BFN | Screw, P.C.Board (12) |
| N9 Ⓢ | XTV3+8BFN | Screw,P.C.Board (2) |
| N10 Ⓢ | XSN3+8S | Screw,Regulator IC (3) |
| N10 Ⓢ | XWA3B | Washer,Regulator IC (3) |
| N11 | SSXW110N01 | Washer,Volume (2) |
| N12 Ⓢ | XNS12 | Nut,Head Phone Jack, Microphone Jack (2) |
| N13 Ⓢ | XNS8 | Nut,Volume (3) |
| **ACCESSORIES** | | |
| **A1** (M) | SSNU110M01 | Instruction Book (1) |
| **A1** (MC) | SSNU110C01E | Instruction Book (1) |
| **A2** (M) ⚠ | SFDAC05M01 | AC Cord (1) |
| **A2** (MC) ⚠ | SRDA010C01 | AC Cord (1) |
| A3 | SFDHC05N01 | Cord,Line Input/Output (2) |
| A4 | SSDH101N02 | Cord,Video Input (2) |
| **PACKING PARTS** | | |
| **P1** (M) | SSHP110M01 | Carton Box (1) |
| **P1** (MC) | SSHP110C01 | Carton Box (1) |
| P2 | SSHH110N01E | Pad,Front(Left) (1) |
| P3 | SSHH110N02E | Pad,Front(Right) (1) |
| P4 | SSHH110N03 | Pad,Rear(Left) (1) |
| P5 | SSHH110N04 | Pad,Rear(Right) (1) |
| P6 | SSHD110N01 | Box,Cords (1) |
| P7 | SFYH60×60 | Polyethylene Bag,Set (1) |
| P8 | SFYH17×16 | Polyethylene Bag,Cords (3) |



# ■ EXPLODED VIEW



| Ref. No. | Part No. | Description |
|---|---|---|
| **VARIABLE RESISTORS** | | |
| VR151 | EWGGDA510375 | Recording Balance |
| VR152 | EWJKDA016A15 | Recording Level |
| VR211 | EVN38CA00B24 | Balance Adjustment 20kΩ(B) |
| VR212 | EVN38CA00B16 | Recovery Time Adjustment 100kΩ(B) |
| VR213 | EVN38CA00B14 | 0dB Adjustment 10kΩ(B) |

| Ref. No. | Part No. | Description |
|---|---|---|
| **VARIABLE RESISTORS** | | |
| VR255 | EWCSNAF15AF5 | Head Phone Level |
| VR365,366 | EVN38CA00B24 | Offset Adjustment 20kΩ(B) |
| VR501 | EVN38CA00B53 | 5kΩ(B) |
| VR502,503 | EVN38CA00B14 | 10kΩ(B) |
| VR504 | EVMG0GA01B54 | 50kΩ(B) |
| **FLUORESCENT DISPLAY TUBE** | | |
| FL201 | SSDQBG193Z | Level/Tracking Indication |
| **RELAY** | | |
| RLY151,260 | SFDYQ11N02 | Muting |

| Ref. No. | Part No. | Description |
|---|---|---|
| **SWITCHES** | | |
| S1 ⚠ | ESB8213V | Power Switch |
| S621 | SSDS2K4KB1X | Master Switch, Playback Mode Switch |
| S631 | EVQQJ104K | Recording Muting |
| S632 | EVQQJ104K | Peak Hold |
| S633 | EVQQJ104K | Tracking |
| S634 | EVQQJ104K | Copy |
| S635 | EVQQJ104K | Playback Muting |
| **FUSE** | | |
| F120 ⚠ | XBA1F10NU14 | 1A,125V |

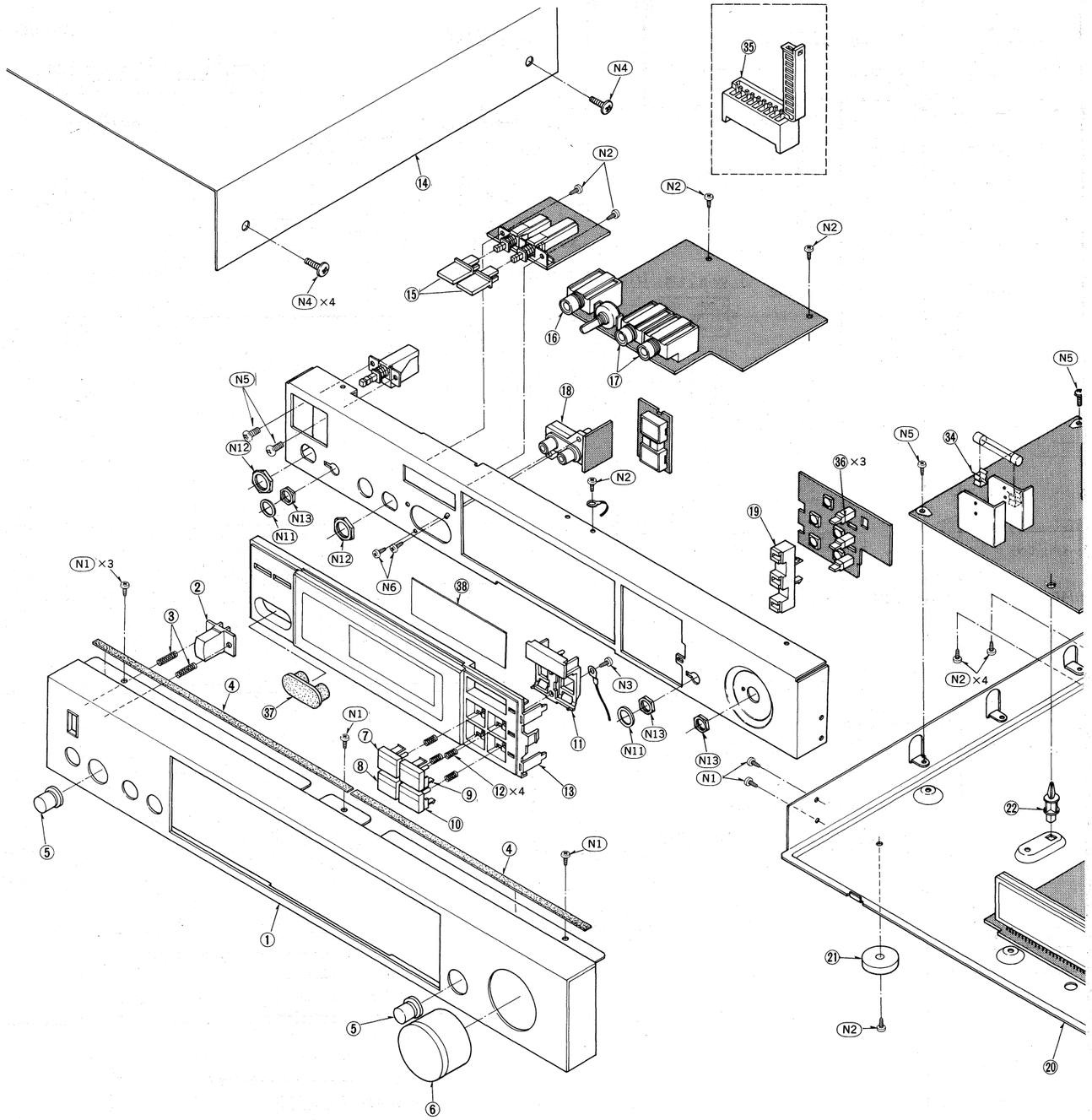
| Ref. No. | Part No. | Description |
|---|---|---|
| **CABINET AND CHASSIS PARTS** | | |
| 1 | SSBP110N01E | Front Panel,with Power Switch Button (1) |
| 2 | SBC261-1 | Button,Power Switch (1) |
| 3 | SUS193 | Spring,Power Switch Button (2) |
| 4 | SSUZ110N03 | Sheet (2) |
| 5 | SBN947-1 | Knob,Recording Balance/Phones Level (2) |
| 6 | SBN943-1 | Knob,Recording Level (1) |
| 7 | SSKT110N07 | Button,Peak Hold (1) |
| 8 | SSKT110N09 | Button,Tracking (1) |
| 9 | SSKT110N08 | Button,PB Mute (1) |
| 10 | SSKT110N10 | Button,Copy (1) |
| 11 | SSKT110N02 | Button,REC Mute (1) |
| 12 | SSQA110N01 | Spring,Buttons (4) |
| 13 | SSUM110N01E | Sub Panel (1) |
| 14 | SSUP110N03 | Cabinet (1) |
| 15 | SBC315-4 | Button,PB Mode/Master VTR Selector (2) |
| 16 | SSDJ3315020 | Jack,Head Phone (1) |
| 17 | SSDJ3315010 | Jack,Microphone (2) |
| 18 | SJF3225N | Terminal Plate,Video Input/Output (1) |
| 19 | SSUM110N02 | Holder,L.E.D. (1) |
| 20 | SSUP110N01 | Bottom Board (1) |
| 21 | SKL117-1 | Foot (4) |
| 22 | SSUM110N03 | Spacer,P.C.B. (2) |
| 23 | SFDBC07-01 | Bushing,Regulator IC (3) |
| 24 | SFDCC07-01 | Insulator, Regulator IC (3) |
| 25 | SSUM110N04 | Clamper,Lead Wires (2) |
| 26 ⚠ | SFDJHSC0491 | Jack,AC IN (1) |

| Ref. No. | Part No. | Description |
|---|---|---|
| **CABINET AND CHASSIS PARTS** | | |
| 27 | SRNZ010M03 | Label,AC IN (1) |
| **28** (M) | SSNN110M01 | Name Plate (1) |
| **28** (MC) | SSNN110C01 | Name Plate (1) |
| 29 | SSUZ101N01 | Sheet (1) |
| 30 | SJF3059-4N | Terminal Plate, Line Input/Output, Video Input/Output, Monitor Output (1) |
| 31 | SSUM101N08 | Latch,P.C.B. (2) |
| 32 | SSUM110N08 | Bracket (1) |
| 34 | SJT345 | Holder,Fuse (2) |
| **35** | SFDJW-D0603 | Connector(3pin) (2) |
| **35** | SFDJW-D0605 | Connector(5pin) (1) |
| **35** | SFDJW-D0606 | Connector(6pin) (1) |
| 36 | SSGZ110N01 | Spacer,L.E.D. (3) |
| 37 | SSGK110N11 | Cap,Video Input/Output Terminal (1) |
| 38 | SSKK110N02 | Filter (1) |
| 39 | SSDC110N01 | Sheet. (1) |
| **SCREWS,WASHERS AND NUTS** | | |
| N1 Ⓢ | XTN3+6B | Screw,Front Panel (7) |
| N2 Ⓢ | XTV3+6BFZ | Screw,P.C.Board, Power Transformer, Foot (17) |
| N3 Ⓢ | XTV3+6BFZ | Screw,Rec Mute Button (1) |
| N4 Ⓢ | XTB4+8BFN | Screw,Cabinet (4) |
| N5 | SRXG010N12 | Screw,Power Switch P.C.Board,Heat Sink,A.C.Socket (7) |
| N6 Ⓢ | XTV3+8BFZ | Screw,Terminal Plate (4) |
| N7 | XTN3+55J | Screw,P.C.Board (2) |

| Ref. No. | Part No. | Description |
|---|---|---|
| **SCREWS,WASHERS AND NUTS** | | |
| N8 Ⓢ | XTV3+6BFN | Screw, P.C.Board (12) |
| N9 Ⓢ | XTV3+8BFN | Screw,P.C.Board (2) |
| N10 Ⓢ | XSN3+8S | Screw,Regulator IC (3) |
| N10 Ⓢ | XWA3B | Washer,Regulator IC (3) |
| N11 | SSXW110N01 | Washer,Volume (2) |
| N12 Ⓢ | XNS12 | Nut,Head Phone Jack, Microphone Jack (2) |
| N13 Ⓢ | XNS8 | Nut,Volume (3) |
| **ACCESSORIES** | | |
| **A1** (M) | SSNU110M01 | Instruction Book (1) |
| **A1** (MC) | SSNU110C01E | Instruction Book (1) |
| **A2** (M) ⚠ | SFDAC05M01 | AC Cord (1) |
| **A2** (MC) ⚠ | SRDA010C01 | AC Cord (1) |
| A3 | SFDHC05N01 | Cord,Line Input/Output (2) |
| A4 | SSDH101N02 | Cord,Video Input (2) |
| **PACKING PARTS** | | |
| **P1** (M) | SSHP110M01 | Carton Box (1) |
| **P1** (MC) | SSHP110C01 | Carton Box (1) |
| P2 | SSHH110N01E | Pad,Front(Left) (1) |
| P3 | SSHH110N02E | Pad,Front(Right) (1) |
| P4 | SSHH110N03 | Pad,Rear(Left) (1) |
| P5 | SSHH110N04 | Pad,Rear(Right) (1) |
| P6 | SSHD110N01 | Box,Cords (1) |
| P7 | SFYH60×60 | Polyethylene Bag,Set (1) |
| P8 | SFYH17×16 | Polyethylene Bag,Cords (3) |



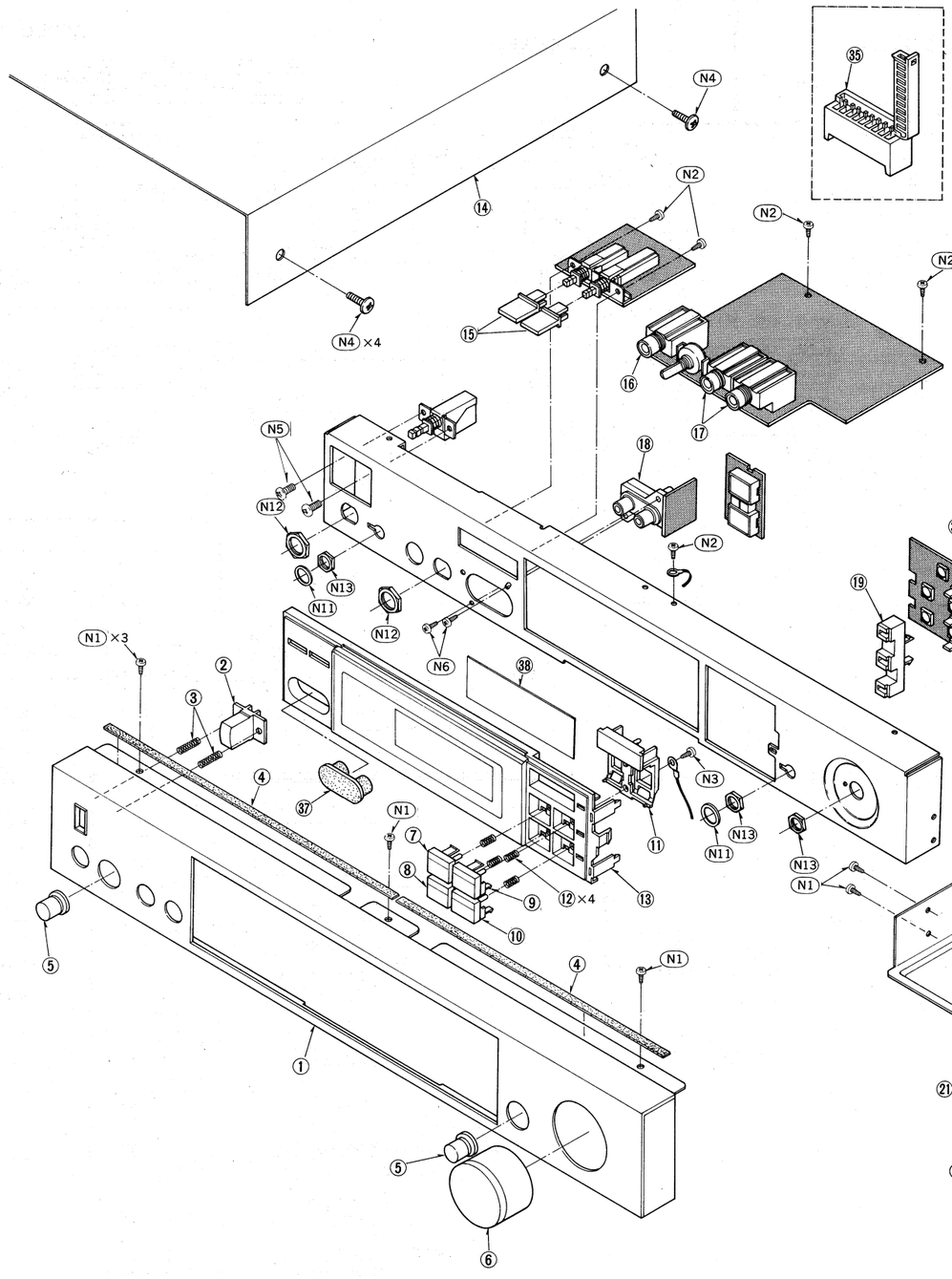
# ■ EXPLODED VIEW

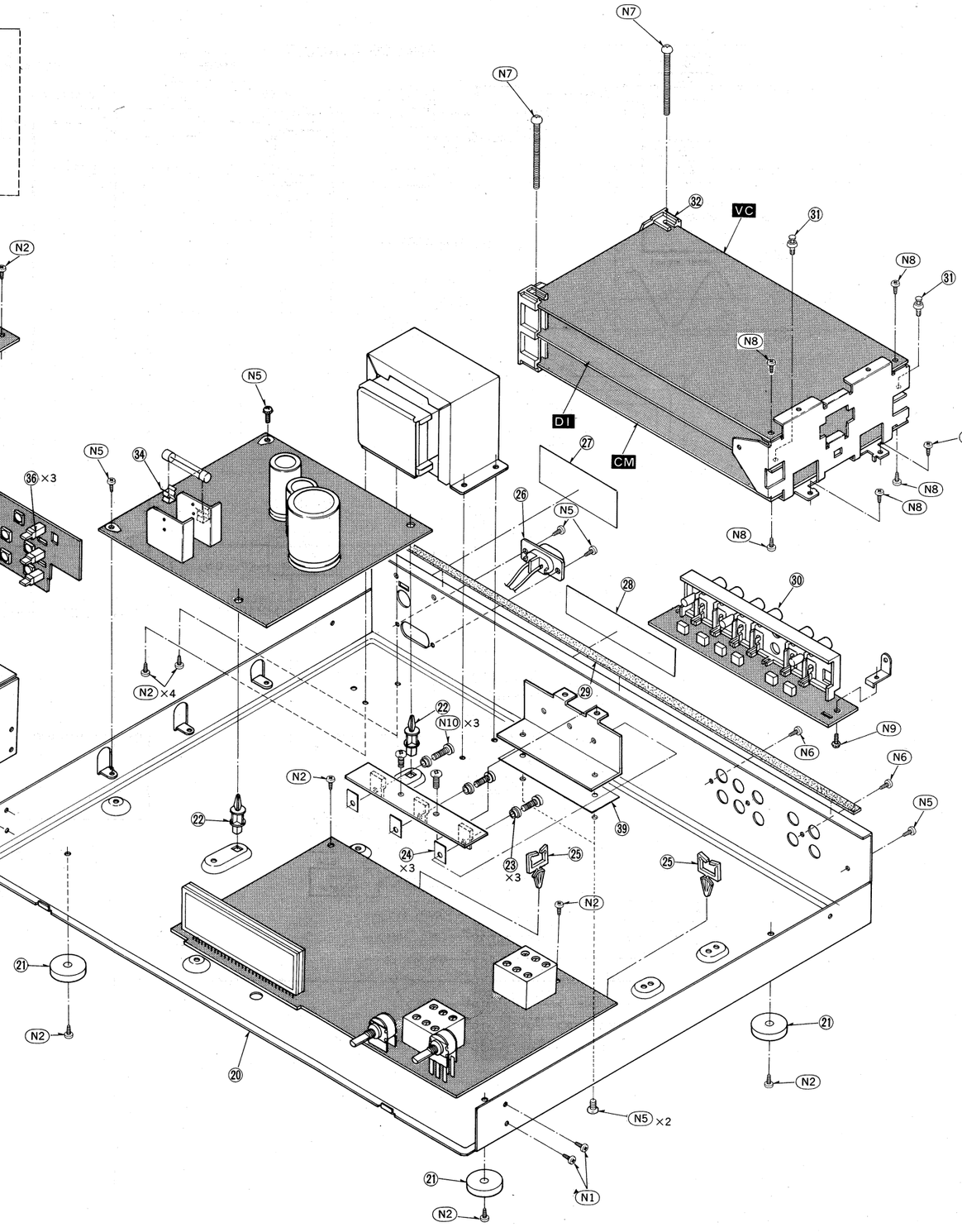


| Part No. | Description |
|---|---|
| | |
| 8213V | Power Switch |
| S2K4KB1X | Master Switch, Playback Mode Switch |
| QJ104K | Recording Muting |
| QJ104K | Peak Hold |
| QJ104K | Tracking |
| QJ104K | Copy |
| QJ104K | Playback Muting |
| | |
| 1F10NU14 | 1A,125V |

| | Description | |
|---|---|---|
| **AND NUTS** | | |
| | Screw, P.C.Board | (12) |
| | Screw,P.C.Board | (2) |
| | Screw,Regulator IC | (3) |
| | Washer,Regulator IC | (3) |
| 1 | Washer,Volume | (2) |
| | Nut,Head Phone Jack, Microphone Jack | (2) |
| | Nut,Volume | (3) |
| | | |
| 01 | Instruction Book | (1) |
| 1E | Instruction Book | (1) |
| | | |
| 01 | AC Cord | (1) |
| 1 | AC Cord | (1) |
| | | |
| 01 | Cord,Line Input/Output | (2) |
| 2 | Cord,Video Input | (2) |
| | | |
| 01 | Carton Box | (1) |
| 1 | Carton Box | (1) |
| | | |
| 1E | Pad,Front(Left) | (1) |
| 2E | Pad,Front(Right) | (1) |
| 3 | Pad,Rear(Left) | (1) |
| 4 | Pad,Rear(Right) | (1) |
| 01 | Box,Cords | (1) |
| 0 | Polyethylene Bag,Set | (1) |
| 6 | Polyethylene Bag,Cords | (3) |

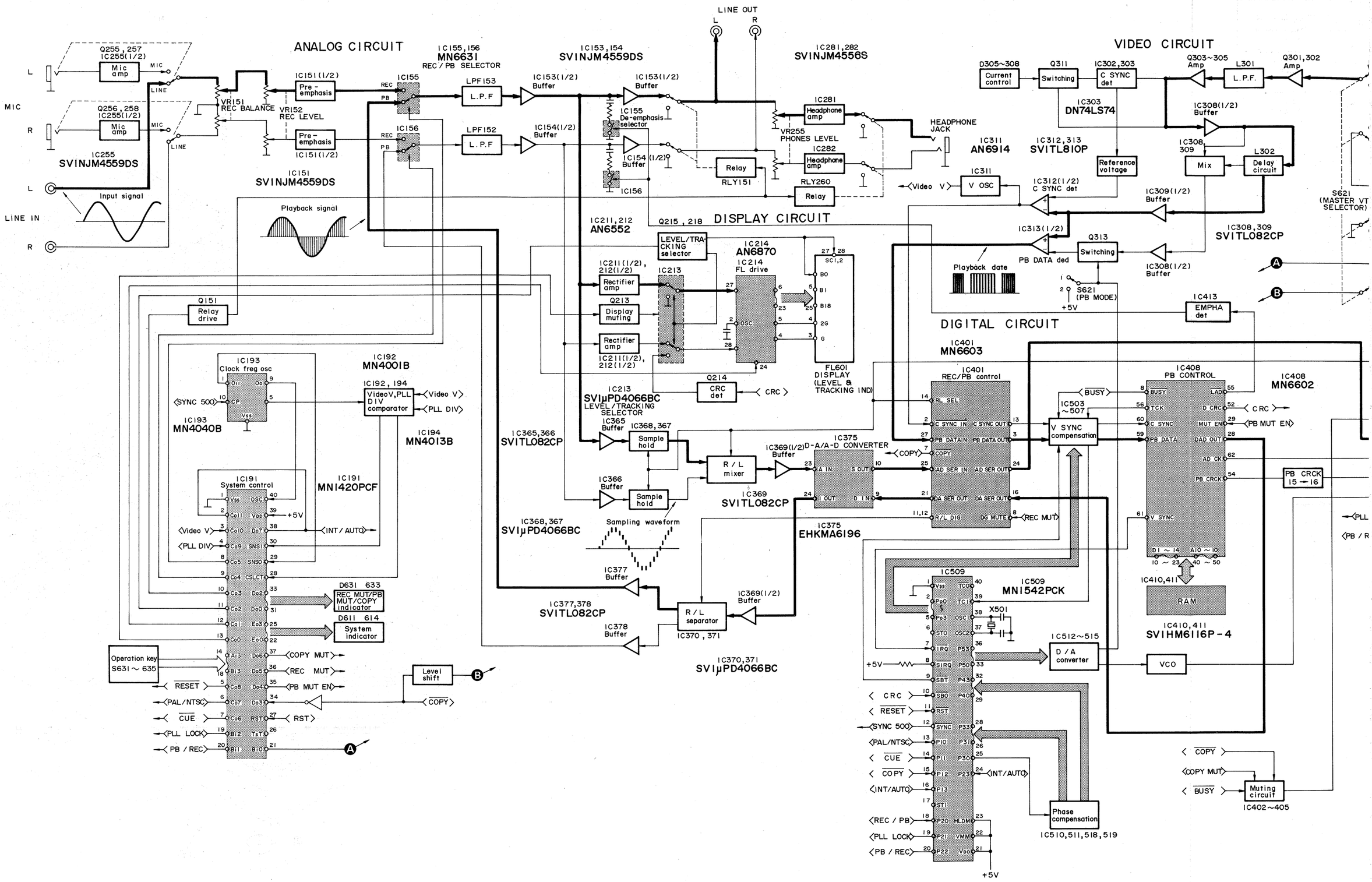
## ■ EXPLODED VIEW



SV-110 SV-110

## ■ BLOCK DIAGRAM



LINE OUT L R

IC155,156 MN6631 REC / PB SELECTOR

IC153,154 SVINJM4559DS

IC281,282 SVINJM4556S

LPF153 L.P.F

IC153(1/2) Buffer

LPF152 L.P.F

IC154(1/2) Buffer

IC155 De-emphasis selector

IC154 (1/2) Buffer

IC156

Relay RLY151

RLY260 Relay

IC281 Headphone amp

IC282 Headphone amp

VR255 PHONES LEVEL

HEADPHONE JACK

IC311 AN6914

IC312,313 SVITL810P

VIDEO CIRCUIT

D305~308 Current control

Q311 Switching

IC302,303 C SYNC det

Q303~305 Amp

L301 L.P.F.

Q301,302 Amp

IC303 DN74LS74

IC308(1/2) Buffer

IC308, 309 Mix

L302 Delay circuit

Reference voltage

VIDEO IN

Video playback signal

MONITOR

S621 (MASTER VTR SELECTOR)

Video V

V OSC

IC312(1/2) C SYNC det

IC309(1/2) Buffer

IC313(1/2) PB DATA ded

Q313 Switching

IC308,309 SVITL082CP

Playback date

S621 (PB MODE)

+5V

IC308(1/2) Buffer

IC413 EMPHA det

IC211,212 AN6552

Q215 , 218 DISPLAY CIRCUIT

LEVEL/TRACKING selector

IC214 AN6870

IC214 FL drive

IC211(1/2), 212(1/2) Rectifier amp

IC213

Q213 Display muting

Rectifier amp

IC211(1/2), 212(1/2)

SC1,2 B0 B1 B18 2G G

FL601 DISPLAY (LEVEL & TRACKING IND)

Q214 CRC det

CRC

IC213 SVIμPD4066BC LEVEL/TRACKING SELECTOR

DIGITAL CIRCUIT

IC401 MN6603

IC401 REC/PB control

IC408 PB CONTROL

IC408 MN6602

IC409 MN6601

IC409 REC control

Q506 , 507 Muting

IC522 Video mixing

Q501 ~ 505 Video amp

IC522 DN74LS126

VIDEO OUT

Video recording signal

IC365,366 SVITL082CP

IC365 Buffer

IC368,367 Sample hold

IC366 Buffer

Sample hold

IC368,367 SVIμPD4066BC

Sampling waveform

IC377 Buffer

IC375 EHKMA6196

IC369(1/2) D-A/A-D CONVERTER

IC369 SVITL082CP

R / L mixer

IC369(1/2) Buffer

IC377,378 SVITL082CP

R / L separator

IC370 , 371

IC378 Buffer

IC370,371 SVIμPD4066BC

BUSY

IC503 ~507 V SYNC compensation

CRC

PB MUT EN

PB CRCK 15 — 16

IC509 MN1542PCK

X501

IC512~515 D / A converter

VCO

IC410,411 RAM

IC410,411 SVIHM6116P-4

IC417,418 SVIHM6116P-4

IC417,418 RAM

X401

PLL DIV

PB / REC

REC/PB

INT / AUTO

COPY

COPY MUT

BUSY

Muting circuit

IC402~405

RESET

SYNC 500

PAL/NTSC

CUE

COPY

INT/AUTO

REC / PB

PLL LOCK

PB / REC

Phase compensation

IC510,511,518,519

POWER SOURCE CIRCUIT

IC131 Regulator +12V

IC101 Regulator +20V

D101 Rectifier

IC132 Regulator +5V

IC102 Regulator +5V

D103 Rectifier

T1 Power transformer

S1 POWER

AC LINE

IC130 Regulator -15V

D102 Rectifier

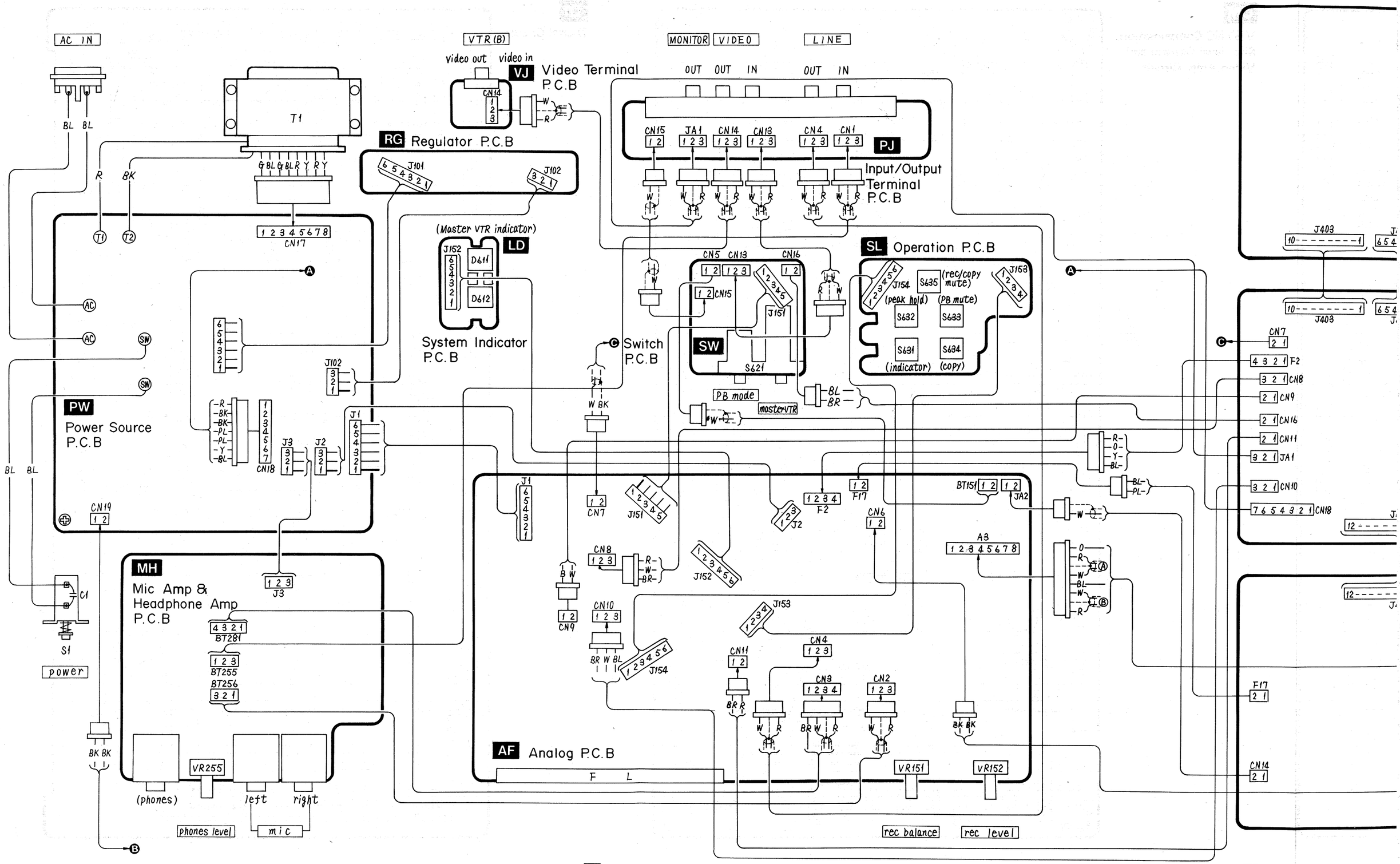
Q105 Regulator -5V

RST

Muting circuit

to FL GND

## ■ CIRCUIT BOARDS AND WIRING CONNECTION DIAGRAM



TR (B)
video in
VJ Video Terminal P.C.B
CN14 1 2 3
W R
P.C.B
J102 3 2 1
TR indicator)
LD
ndicator
MONITOR VIDEO LINE
OUT OUT IN OUT IN
CN15 1 2
JA1 1 2 3
CN14 1 2 3
CN13 1 2 3
CN4 1 2 3
CN1 1 2 3
PJ
Input/Output Terminal P.C.B
SL Operation P.C.B
CN5 1 2
CN13 1 2 3
CN16 1 2
1 2 CN15
J151 1 2 3 4 5
SW
S621
J154 1 2 3 4 5 6
S635 (rec/copy mute)
J153 1 2 3 4
(peak hold)
(PB mute)
S632
S633
S631 (indicator)
S634 (copy)
Switch P.C.B
PB mode
masterVTR
W BK
8L
8R
R-
O-
Y-
BL-
BL-
PL-
J1 6 5 4 3 2 1
1 2 CN7
J151 1 2 3 4 5
1 2 3 4 F2
F17 1 2
J2 1 2 3
CN6 1 2
BT151 1 2
1 2 JA2
A3 1 2 3 4 5 6 7 8
CN8 1 2 3
R-
W-
BR-
B W
1 2 CN9
J152 1 2 3 4 5 6
J153 1 2 3 4
CN10 1 2 3
BR W BL
J154 1 2 3 4 5 6
CN11 1 2
CN4 1 2 3
CN3 1 2 3 4
CN2 1 2 3
BR R
W R
BK BK
VR151
VR152
rec balance
rec level
AF Analog P.C.B
F L
21

12 - - - - - - - - - 1 J411
DI Digital P.C.B
J403 10 - - - - - - - 1
J406 6 5 4 3 2 1
J402 10 - - - - - - - 1
J412 5 4 3 2 1
J401 16 - - - - - - - - - - - - - - - 1
45 For PAL / SECAM format
CM V SYNC Compensation Slice Level Control & Video Amp P.C.B
CN7 2 1
4 3 2 1 F2
3 2 1 CN8
2 1 CN9
2 1 CN16
2 1 CN11
3 2 1 JA1
3 2 1 CN10
7 6 5 4 3 2 1 CN18
J405 12 - - - - - - - - - - - 1
J404 12 - - - - - - - - - - - 1
VC Video Circuit & DA/AD Converter P.C.B
F17 2 1
CN14 2 1
1 2 3 4 5 6 7 8 A3
CN6 1 2
CN19 1 2
22

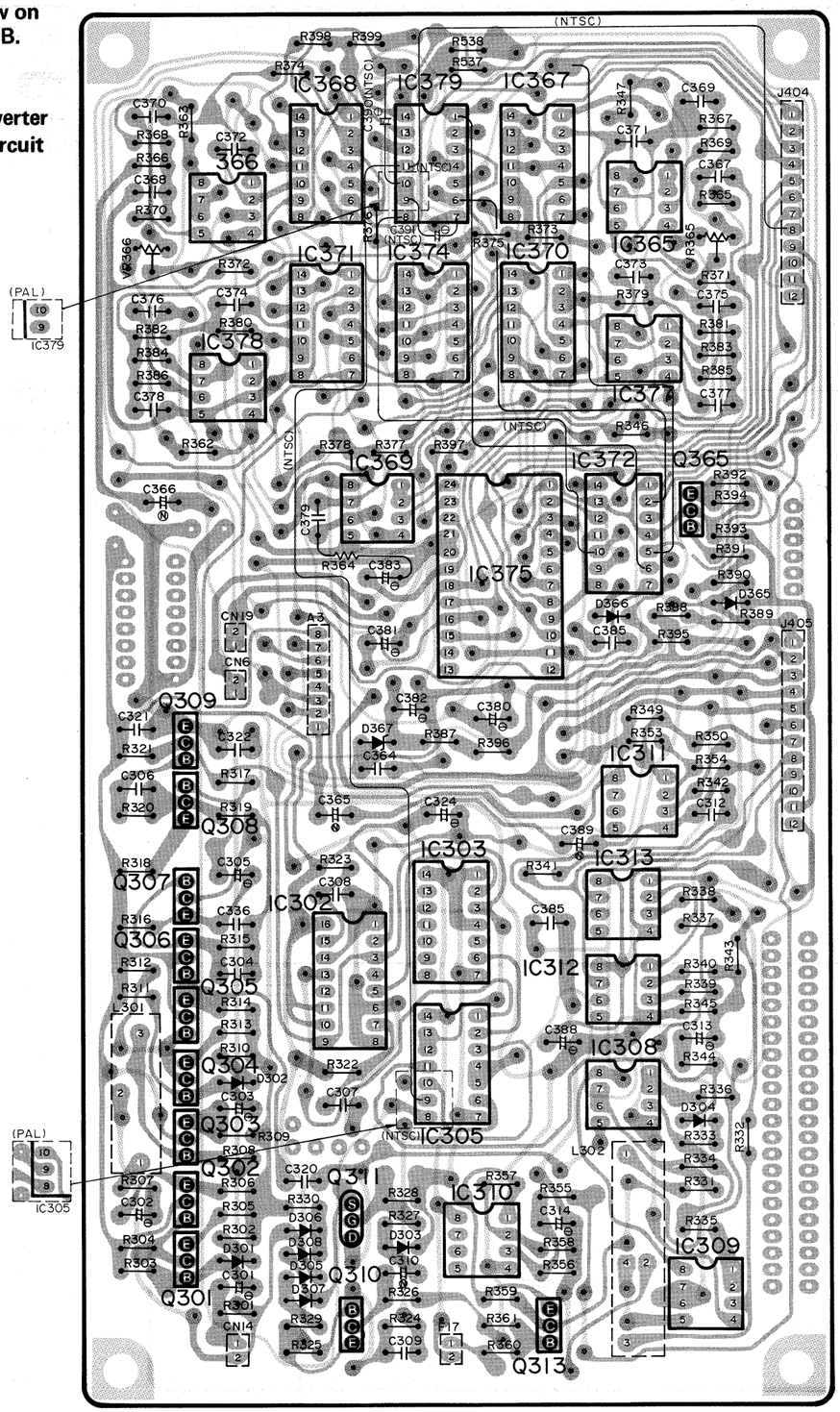
23

## ■ PRINTED CIRCUIT BOARDS

Circuit view on top of P.C.B.

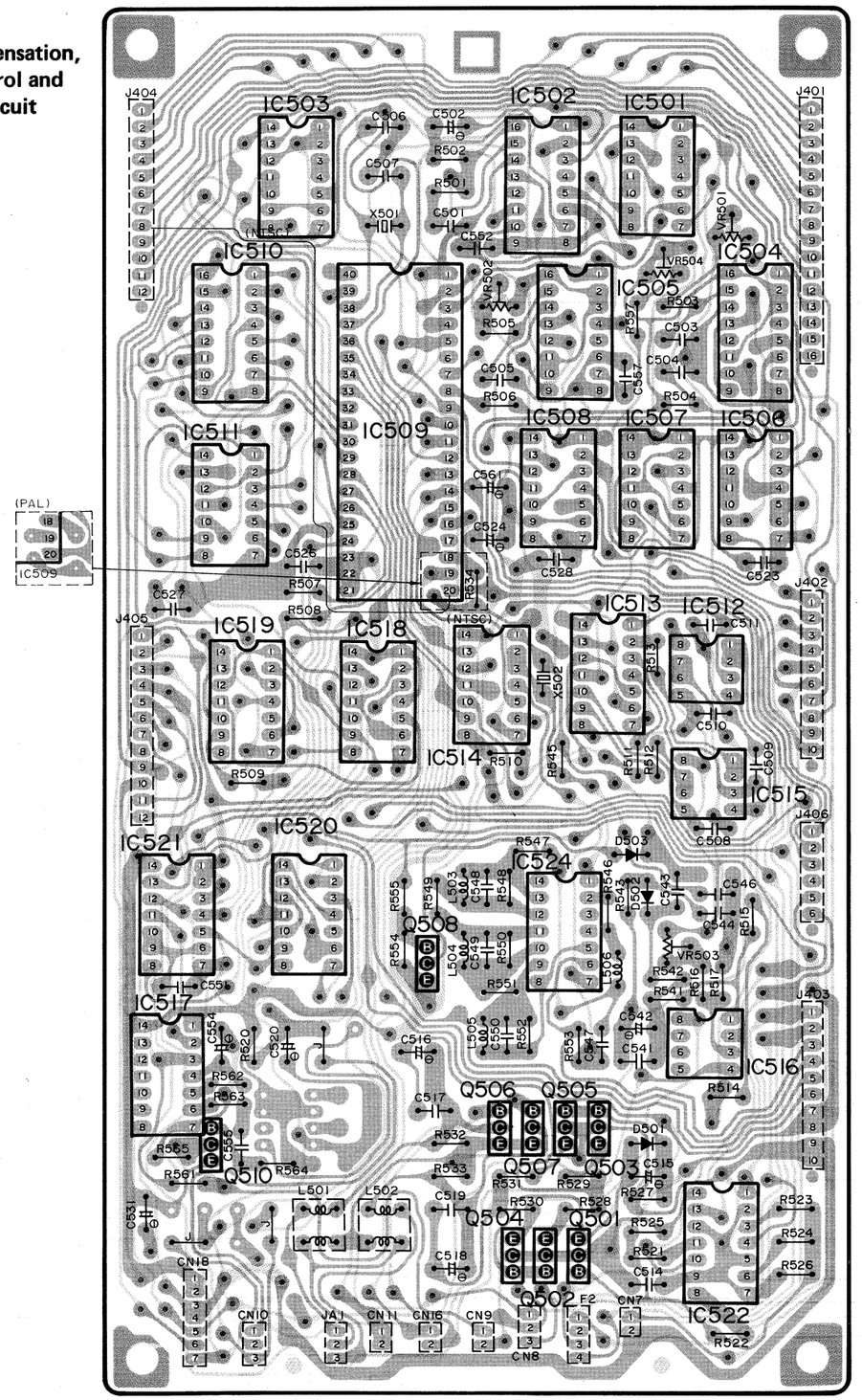
**VC**

**DA/AD Converter and Video Circuit**




**CM**

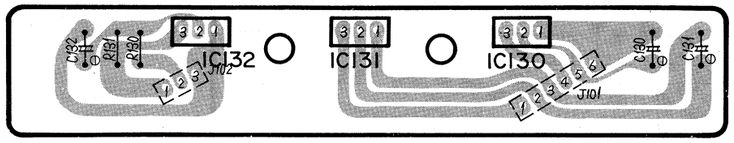
**V SYNC Compensation, Slice level Control and Video Amp. Circuit**



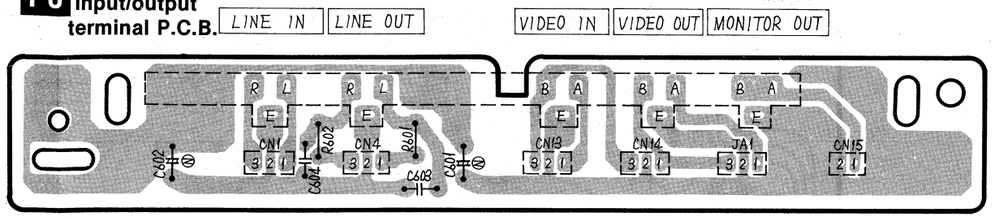

**DI**

**Digital Circuit**

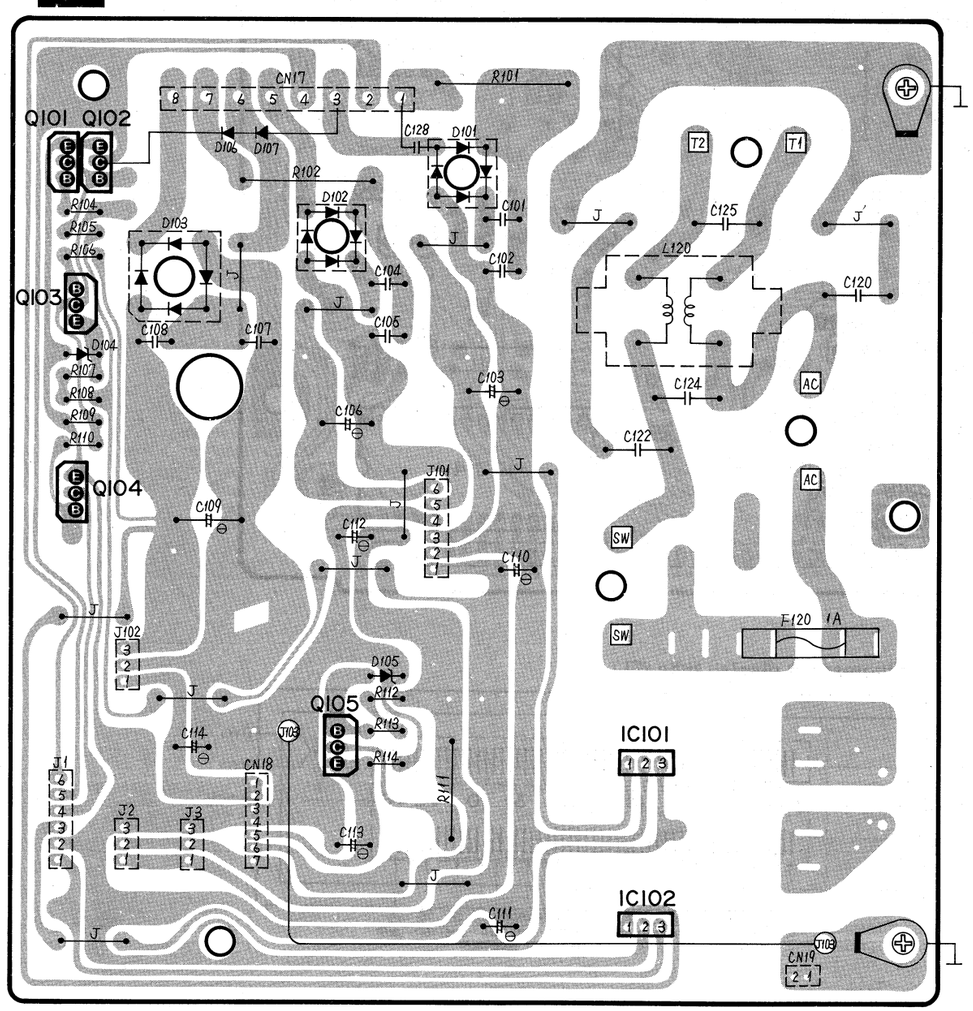
## RG Regulator P.C.B.



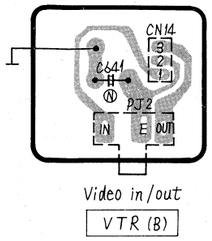

## PJ Input/output terminal P.C.B.



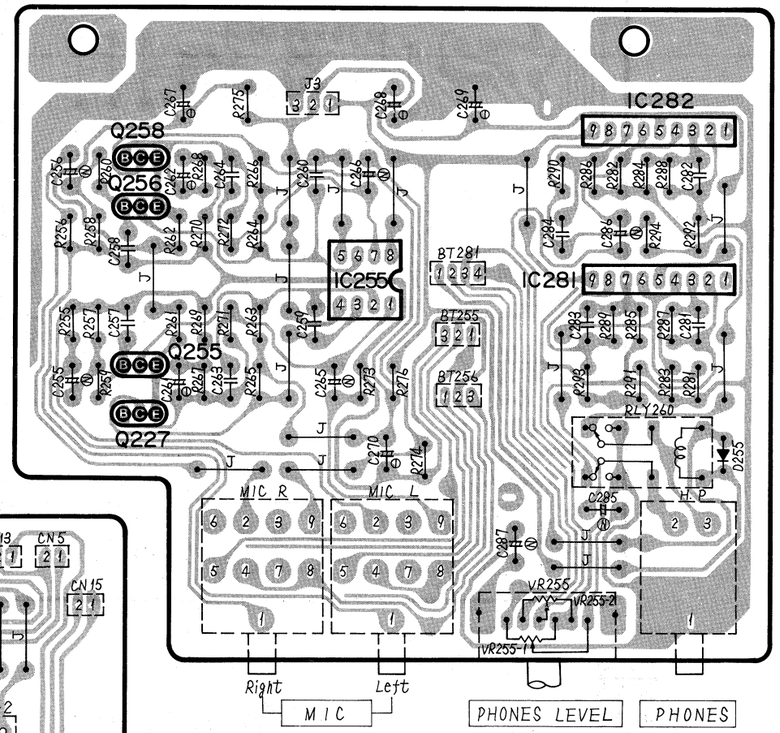

## PW Power source P.C.B.



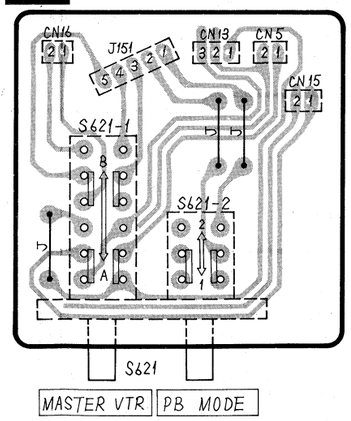

## VJ Terminal P.C.B.



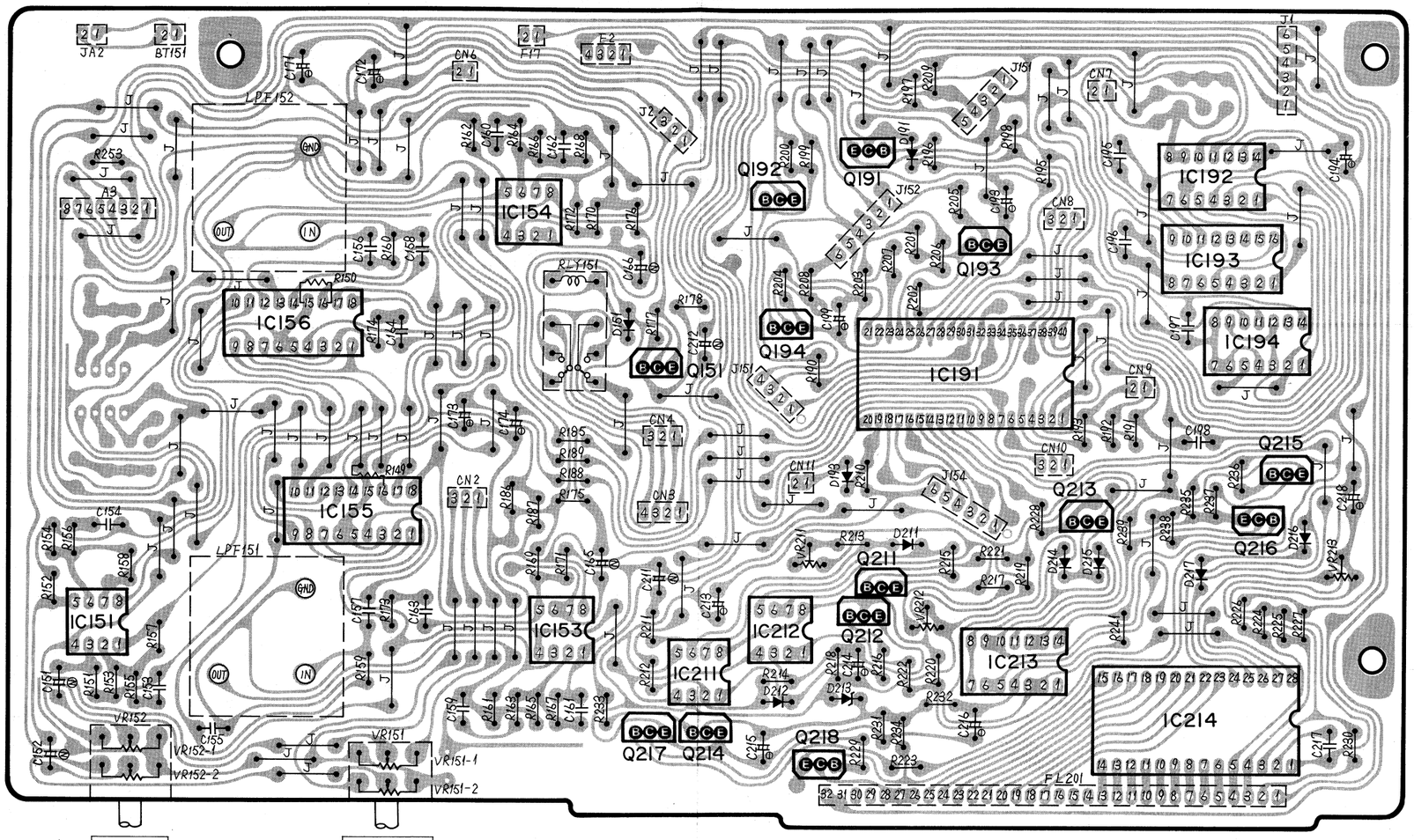

## MH Mic amp. & headphone amp. P.C.B.



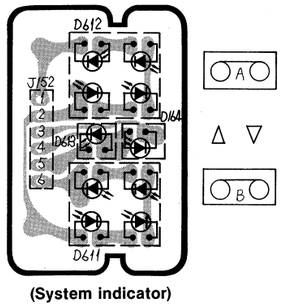

## SW Switch P.C.B.



## AF Analog & display P.C.B.

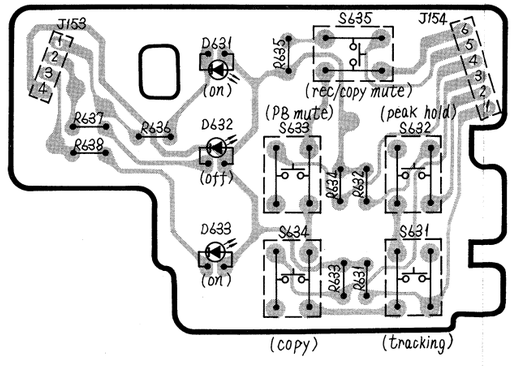



## LD System indicator P.C.B.

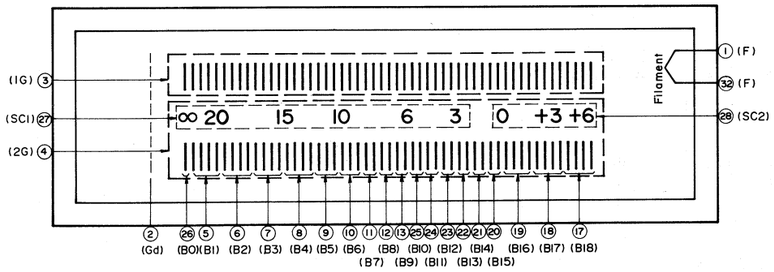



(System indicator)

## SL Operation P.C.B.




## • Fluorescent display tube (FL)



# VC

Q301,304 2SC2377 INPUT AMP

Q302,303 2SD636 INPUT AMP

Q305,306 2SD636 INPUT AMP & C SYNC SEPARATOR

Q307,308 2SB641 C SYNC SEPARATOR

Q309 2SD636 CSYNC SEPARATOR

IC303 DN74LS74A D FLIP FLOP

IC305 DN74LS00 NAND GATE

IC302 DN74LS123 MULTIVIBRATOR

Q310 2SB641 FET DRIVER

Q311 2SK301 SWITCHING

D301,302 SVDISS133

D303 SVDISS133

D304 SVDISS133

D305~308 SVDISS133

D365,366 SVDISS133

L301 ELBSF7

LPF

IC308 SVITL082CP OPERATIONAL AMP

IC309 SVITL082CP OPERATIONAL AMP

IC312,313 SVITL810CP OPERATIONAL AMP

IC365,366 SVITL082CP OPERATIONAL AMP

IC308,309 SVITL082CP OPERATIONAL AMP

IC379 DN74LS04 INVERTER

IC367,368 SVIμPD4066BC QUAD BILATERAL SWITCH

IC370,371 SVIμPD4066BC QUAD BILATERAL SWITCH

IC311 AN6914 COMPARATOR

IC310 AN6652 COMPARATOR

IC312 L302 400nSEC

Q313 2SD636 SWITCHING

D367 MA4051 5.1V ZENER

IC372 DN74LS126A BUFFER

IC374 DN74LS74A D FLIP FLOP

IC375 EHKMA6196 D-A/A-D CONVERTER

IC377,378 SVITL082CP OPERATIONAL AMP.

IC369 SVITL082CP OPERATIONAL AMP

CN14 1 VIDEO IN 2 GND — To AF P.C.B JA2

A3 1 ADL 2 GND 3 ADR 4 DAL 5 GND 6 DAR 7 /EMPH 8 PB/REC — To AF P.C.B

F17 1 V.EO 2 +5V — To P.C.B

J405 1 PB/REC 2 +12V 3 -15V 4 GND 5 +5V 6 -5V 7 VIDEO V 8 /CSYNC 9 PB DATA 10 S.LEVEL 11 +5V 12 GND — To P.C.B

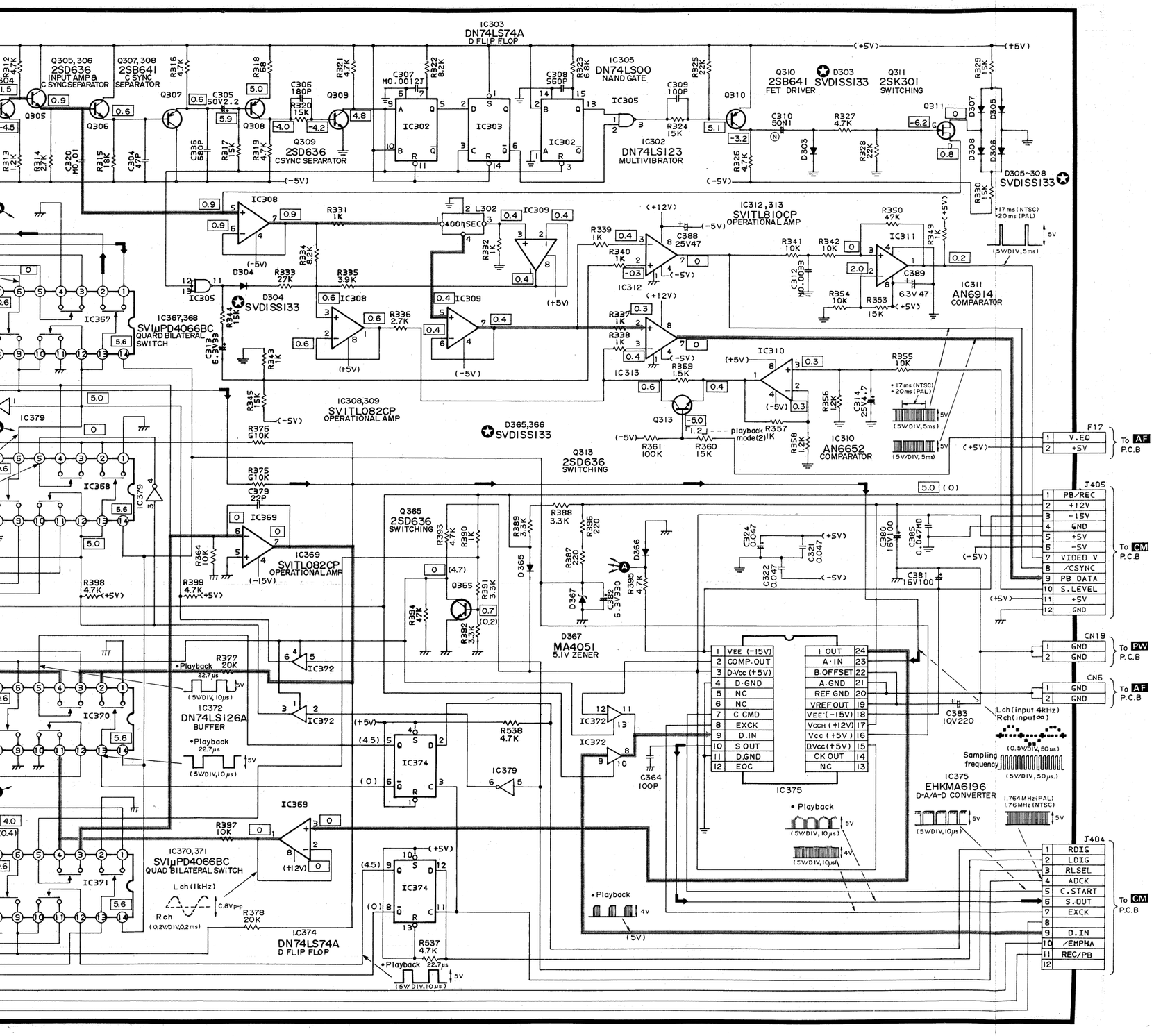
CN19 1 GND 2 GND — To P.C.B

CN6 1 GND 2 GND — To P.C.B

J404 1 RDIG 2 LDIG 3 RLSEL 4 ADCK 5 C.START 6 S.OUT 7 EXCK 8 9 D.IN 10 /EMPHA 11 REC/PB 12 — To P.C.B

| | |
|---|---|
| 1 | VEE (-15V) |
| 2 | COMP.OUT |
| 3 | D-Vcc (+5V) |
| 4 | D-GND |
| 5 | NC |
| 6 | NC |
| 7 | C CMD |
| 8 | EXCK |
| 9 | D.IN |
| 10 | S OUT |
| 11 | D.GND |
| 12 | EOC |

| | |
|---|---|
| 24 | I OUT |
| 23 | A-IN |
| 22 | B-OFFSET |
| 21 | A.GND |
| 20 | REF GND |
| 19 | VREF OUT |
| 18 | VEE (-15V) |
| 17 | Vcch (+12V) |
| 16 | Vcc (+5V) |
| 15 | D.Vcc (+5V) |
| 14 | CK OUT |
| 13 | NC |




# ■ SCHEMATIC DIAGRAM Ⓐ

## DA/AD Converter and Video Circuit

**Notes:**

1. **S601** : Power switch in "**on**" position.
2. **S602–1** : Master VTR switch in "**A**" position.
   A ⟷ B
3. **S602–2** : Playback mode switch in "**1**" position.
   1 ⟷ 2
4. **S631** : Tracking switch.
5. **S632** : Peak hold switch.
6. **S633** : Copy switch.
7. **S634** : Playback muting switch
8. **S635** : Rec/Copy muting switch.
9. The voltage value and waveforms are reference voltage and waveform in playback mode which are measured by DC electronic voltmeter (high impedance) and oscilloscope on the basis of each line. Accordingly, the voltage value may include some error depending upon the internal impedance of DC electronic voltmeter (tester, etc.) and set measured.
   * ▭ : Voltage in playback mode.
   * ( ) : Voltage in recording mode.
10. Part No. with ✪ mark are not indentical between regulator part No. and repair part No. supplied.
    So, when placing an order for repair parts, use the part No. in the replacement part list of repair parts.
11. ——— : +B voltage lines. ▒▒▒ : Playback signal lines.
    ➡ : Recording signal lines.
12. Important safety notice:
    Components identified by ⚠ mark have special characteristics important for safety. When replacing any of these components, use only manufacturer's specified parts.
13. This schematic diagram may be modified at anytime with the development of new technolgy.
14. Both NTSC and PAL/SECAM formats are mentioned in this schematic diagram.
    (NTSC) and (PAL) in the schematic diagram indicates the difference in format.
    Those with (NTSC) are connected only to NTSC format.
    Those with (PAL) are connected only to PAL/SECAM format.
    When the constant is different between NTSC and PAL/SECAM formats, refer to the table in the schematic diagram and the resistors & capacitors list.

**IMPORTANT SAFETY NOTICE**

The shaded area on this schematic diagram incorporates special features important for protection from fire and electrical shock hazards.
When servicing it is essential that only manufacturer's specified parts be used for the critical components in the shaded areas of the schematic.

**• Product for MC only**

**FUSE REPLACEMENT**

Symbol located near the fuse indicates fast operating type. For continued protection against fire hazard, replace with same type fuse. Refer to the symbol for fuse rating.

**FUSIBLE REMPLACEMENT**

Le symbole qui se trouve près du fusible singifie un fusible à action rapide. Pour une protection contiue contre les risques d'incendie, n'utiliser que des fusibles du même type. Se rapporter au symbole pour la valeur des fusibles.

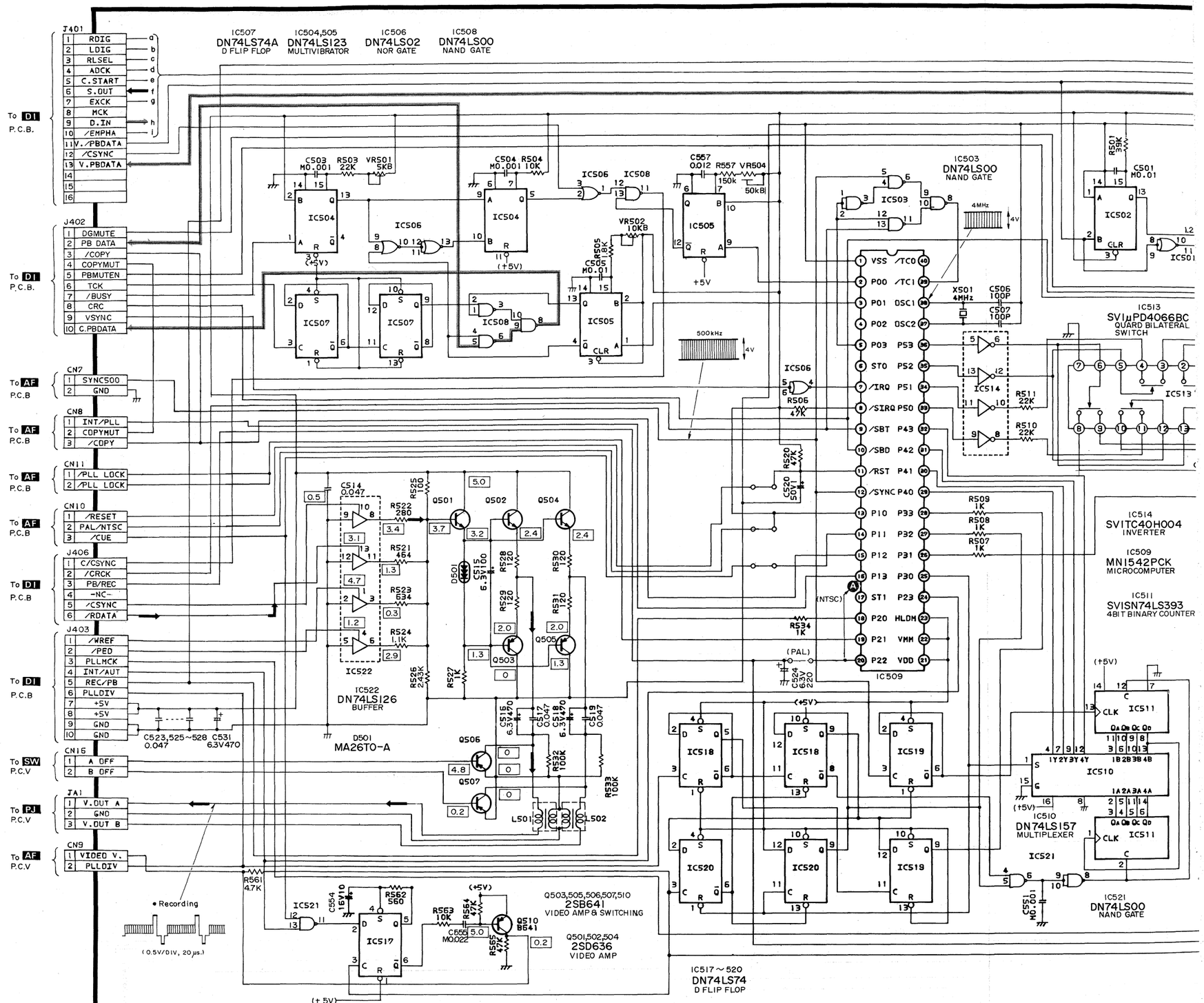
1 2 3 4 5 6 7 8 9 10

A B C D E F

# ■ SCHEMATIC DIAGRAM Ⓑ

## V SYNC Compensation, Slice Level Control and Video Amp. Circuit

| J401①pin | J402②pin |
|---|---|
| T---22.7μs 5V (5V/DIV, 10μs) | 5V (5V/DIV, 20μs) |
| J401②pin | J402⑥pin |
| T---22.7μs 5V (5V/DIV, 10μs) | 2.64MHz(NTSC) 2.625MHz(PAL) 4V |
| J401③pin | J402⑦pin |
| T---22.7μs 5V (5V/DIV, 10μs) | T---17ms(NTSC) 20ms(PAL) 5V (5V/DIV, 5ms) |
| J401④pin | J402⑧pin |
| 1.76MHz(NTSC) 1.764MHz(PAL) 5V | 4V (5V/DIV, 5ms) |
| J401⑤pin | J402⑨pin |
| 5V (5V/DIV, 10μs) | T---17ms(NTSC) 20ms(PAL) 5V (5V/DIV, 5ms) |
| J401⑥pin | J402⑩pin |
| 5V (5V/DIV, 10μs) | 5V |
| J401⑦pin | J406①pin |
| 4V (5V/DIV, 10μs) | T---17ms(NTSC) 20ms(PAL) 5V (5V/DIV, 5ms) |
| J401⑧pin | J406②pin |
| 15.86MHz(NTSC) 15.75MHz(PAL) 4V | T---17ms(NTSC) 20ms(PAL) 5V (5V/DIV, 5ms) |
| J401⑨pin | J406⑤pin |
| 4V (5V/DIV, 10μs) | T---17ms(NTSC) 20ms(PAL) 5V (5V/DIV, 5ms) |
| J401⑪⑫pin | J406⑥pin |
| T---17ms(NTSC) 20ms(PAL) 4V (5V/DIV, 5ms) | T---17ms(NTSC) 20ms(PAL) 5V (5V/DIV, 5ms) |
| J401⑬pin | J406⑥pin |
| T---17ms(NTSC) 20ms(PAL) 4V (5V/DIV, 5ms) | 15.86MHz(NTSC) 15.75MHz(PAL) 4V |
| J403①pin | J403⑥pin |
| T---63μs. 5V (5V/DIV, 20μs) | T---17ms(NTSC) 20ms(PAL) 5V (5V/DIV, 5ms) |
| J403②pin | |
| T---63μs 5V (5V/DIV, 20μs) | |



5 6 7 8 9 10 11 12 13 14

CM

IC507 DN74LS74A D FLIP FLOP
IC504,505 DN74LSI23 MULTIVIBRATOR
IC506 DN74LS02 NOR GATE
IC508 DN74LS00 NAND GATE

RDIG LDIG RLSEL ADCK C.START S.OUT EXCK MCK D.IN /EMPHA /PBDATA /CSYNC /PBDATA
DGMUTE PB DATA /COPY COPYMUT PBMUTEN TCK /BUSY CRC VSYNC PBDATA
SYNC500 GND
INT/PLL COPYMUT /COPY
PLL LOCK PLL LOCK
/RESET AL/NTSC /CUE
/CSYNC /CRCK PB/REC -NC- /CSYNC /RDATA
/WREF /PED PLLMCK INT/AUT REC/PB PLLDIV +5V +5V GND GND
A OFF B OFF
OUT A GND OUT B
IDED V. PLLDIV

C503 M0.001 R503 22K VR501 5KB
C504 M0.001 R504 10K
C557 0.012 R557 VR504 150k 50kB
C505 M0.01 R505 1.8K
VR502 10KB
IC504 IC505 IC506 IC507 IC508

IC503 DN74LS00 NAND GATE
4MHz 4V
500kHz 4V
X501 4MHz C506 100P C507 100P
IC509 MN1542PCK MICROCOMPUTER
(NTSC) (PAL)
R534 1K R509 1K R508 1K R507 1K
C524 0.01 220

IC502 DN74LSI23 MULTIVIBRATOR
R501 39K C501 M0.01 R502 39K C502 25V3.3 C552 M0.0027
IC501 DN74LS02 NOR GATE
(NTSC)

IC513 SVIμPD4066BC QUARD BILATERAL SWITCH
IC514 SVITC40H004 INVERTER
R511 22K R510 22K
R513 10K R512 10K
IC515 IC516 IC512 IC517
C509 M0.1 C511 M0.1 C508 M0.1
R515 22K IC512,515 SVITL082CP BUFFER
R541 2.2K R514 12K R516 1K VR503 50kB R517 5.6K
IC516 SVINJM4559DS DC AMP.
+12V -15V

IC511 SVISN74LS393 4BIT BINARY COUNTER
IC510 DN74LS157 MULTIPLEXER
IC521 DN74LS00 NAND GATE
IC524 DN74LS04 INVERTER
R554 47K R555 4.7K Q508 2SB641 D503 SVDISS133
X502 4MHz R545 1M R542 12K C543 104 C542 16V10 C546 68P D502 SVDKV1236Z R543 1K C544 104 R546 47
C541 M0.01
C550 7P C549 7P C548 7P C547 7P
L505 10μ L504 10μ L503 10μ L506 L504
R552 56K R550 56K R548 56K R547 3.3K
R551 3.3K R549 3.3K
R553 10K C551 M0.01
4MHz 5V

IC522 DN74LSI26 BUFFER
D501 MA26T0-A
Q501 Q502 Q504 Q503 Q505 Q506 Q507
R522 280 R521 464 R523 634 R524 1.1K R525 100 R526 2.43K R527 1K R528 120 R529 120 R530 120 R531 120 R532 100K R533 100K
D501 6.5V150
C514 0.047 C515 6.3V470 C516 6.3V470 C517 0.047 C518 6.3V470 C519 0.047
C523,525~528 0.047 C531 6.3V470
L501 L502
R561 4.7K
• Recording (0.5V/DIV, 20μs.)

IC517 R562 560 C554 16V10 R563 10K R564 47K C555 M0.022 Q510 8641
(+5V)
Q503,505,506,507,510 2SB641 VIDEO AMP & SWITCHING
Q501,502,504 2SD636 VIDEO AMP
IC517~520 DN74LS74 D FLIP FLOP

IC518 IC519 IC520
R520 47K C520 M0.01 R506 47K

J404
1 LDIG
2 RDIG
3 RLSEL
4 ADCK
5 C.START
6 S.OUT
7 EXCK
8 MCK
9 D.IN
10 /EMPHA
11 REC/PB
12
To VC P.C.B.

CN18
1 +5V
2 +5V
3 GND
4 GND
5 -5V
6 +12V
7 -15V
To PW P.C.B.

J405
1 PB/REC
2 +12V
3 -15V
4 GND
5 +5V
6 -5V
7 VIDEO V.
8 V./CSYNC
9 V.PBDATA
10 S.LEVEL
11 +5V
12 GND
To VC P.C.B

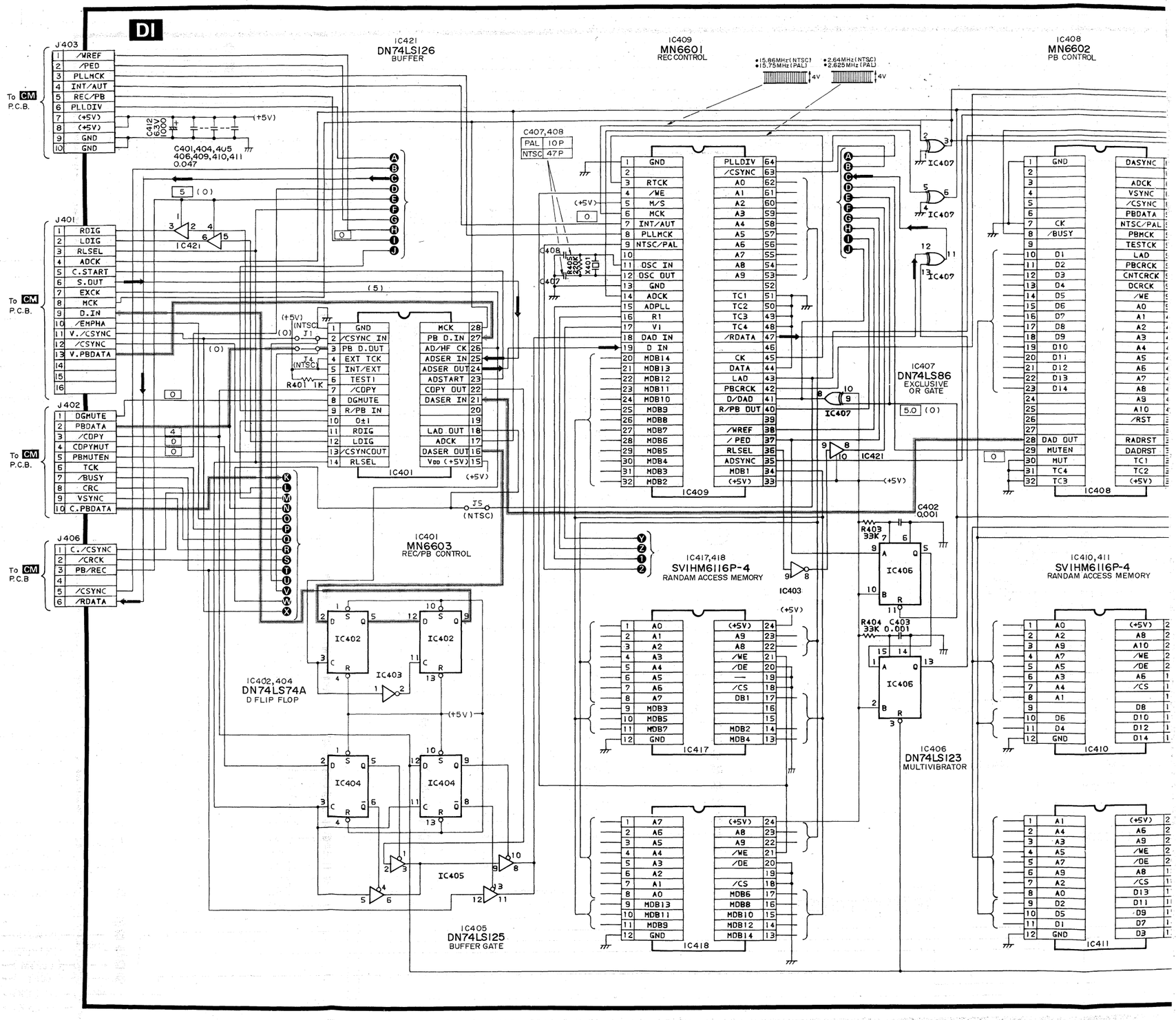
F2
1 CRC
2 -NC-
3 RECMUT
4 PBMUTEN
To AF P.C.B.

J405 ⑦pin
T--- 17ms (NTSC) 20ms (PAL)
(5V/DIV, 5ms.) 5V
J405 ⑧pin
(5V/DIV, 10μs) 5V
J405 ⑨pin
T--- 17ms (NTSC) 20ms (PAL)
(5V/DIV, 5ms.) 4V

# ■ SCHEMATIC DIAGRAM ©

## Digital Circuit

| J401①pin | J402②pin |
|---|---|
| T---22.7μs, 5V (5V/DIV, 10μs) | T---22.7μs, 5V (5V/DIV, 20μs) |
| **J401②pin** | **J402⑥pin** |
| T---22.7μs, 5V (5V/DIV, 10μs) | 2.64MHz(NTSC) 2.625MHz(PAL), 4V |
| **J401③pin** | **J402⑦pin** |
| T---22.7μs, 5V (5V/DIV, 10μs) | T---17ms(NTSC) 20ms(PAL), 5V (5V/DIV, 5ms) |
| **J401④pin** | **J402⑧pin** |
| 1.76MHz(NTSC) 1.764MHz(PAL), 5V | 4V (5V/DIV, 5ms) |
| **J401⑤pin** | **J402⑨pin** |
| 5V (5V/DIV, 10μs) | T---17ms(NTSC) 20ms(PAL), 5V (5V/DIV, 5ms) |
| **J401⑥pin** | **J402⑩pin** |
| 5V (5V/DIV, 10μs) | 5V |
| **J401⑦pin** | **J406①pin** |
| 4V (5V/DIV, 10μs) | T---17ms(NTSC) 20ms(PAL), 5V (5V/DIV, 5ms) |
| **J401⑧pin** | **J406②pin** |
| 15.86MHz(NTSC) 15.75MHz(PAL), 4V | T---17ms(NTSC) 20ms(PAL), 5V (5V/DIV, 5ms) |
| **J401⑨pin** | **J406⑤pin** |
| 4V (5V/DIV, 10μs) | T---17ms(NTSC) 20ms(PAL), 5V (5V/DIV, 5ms) |
| **J401⑪⑫pin** | **J406⑥pin** |
| T---17ms(NTSC) 20ms(PAL), 4V (5V/DIV, 5ms) | T---17ms(NTSC) 20ms(PAL), 5V (5V/DIV, 5ms) |
| **J401⑬pin** | **J406⑥pin** |
| T---17ms(NTSC) 20ms(PAL), 4V (5V/DIV, 5ms) | 15.86MHz(NTSC) 15.75MHz(PAL), 4V |
| **J403①pin** | **J403⑥pin** |
| T---63μs. 5V (5V/DIV, 20μs) | T---17ms(NTSC) 20ms(PAL), 5V (5V/DIV, 5ms) |
| **J403②pin** | |
| T---63μs 5V (5V/DIV, 20μs) | |



IC408
MN6602
PB CONTROL

•2.64MHz(NTSC)
•2.625MHz(PAL)
4V 4V

IC407
DN74LS86
EXCLUSIVE OR GATE

IC406
DN74LS123
MULTIVIBRATOR

IC410,411
SVIHM6116P-4
RANDAM ACCESS MEMORY

IC420
DN74LS123
MULTIVIBRATOR

IC412,415
DN74LS161A
4-BIT BINARY COUNTER

IC403
DN74LS04
INVERTER

IC414
DN74LS02
NOR GATE

IC413,416
DN74LS74A
D FLIP FLOP

| | | | |
|---|---|---|---|
| 1 | GND | DASYNC | 64 |
| 2 | | | 63 |
| 3 | | ADCK | 62 |
| 4 | | VSYNC | 61 |
| 5 | | /CSYNC | 60 |
| 6 | | PBDATA | 59 |
| 7 | CK | NTSC/PAL | 58 |
| 8 | /BUSY | PBMCK | 57 |
| 9 | | TESTCK | 56 |
| 10 | D1 | LAD | 55 |
| 11 | D2 | PBCRCK | 54 |
| 12 | D3 | CNTCRCK | 53 |
| 13 | D4 | DCRCK | 52 |
| 14 | D5 | /WE | 51 |
| 15 | D6 | A0 | 50 |
| 16 | D7 | A1 | 49 |
| 17 | D8 | A2 | 48 |
| 18 | D9 | A3 | 47 |
| 19 | D10 | A4 | 46 |
| 20 | D11 | A5 | 45 |
| 21 | D12 | A6 | 44 |
| 22 | D13 | A7 | 43 |
| 23 | D14 | A8 | 42 |
| 24 | | A9 | 41 |
| 25 | | A10 | 40 |
| 26 | | /RST | 39 |
| 27 | | | 38 |
| 28 | DAD OUT | RADRST | 37 |
| 29 | MUTEN | DADRST | 36 |
| 30 | MUT | TC1 | 35 |
| 31 | TC4 | TC2 | 34 |
| 32 | TC3 | (+5V) | 33 |

IC408

| | | | |
|---|---|---|---|
| 1 | A0 | (+5V) | 24 |
| 2 | A2 | A8 | 23 |
| 3 | A9 | A10 | 22 |
| 4 | A7 | /WE | 21 |
| 5 | A5 | /OE | 20 |
| 6 | A3 | A6 | 19 |
| 7 | A4 | /CS | 18 |
| 8 | A1 | | 17 |
| 9 | | D8 | 16 |
| 10 | D6 | D10 | 15 |
| 11 | D4 | D12 | 14 |
| 12 | GND | D14 | 13 |

IC410

| | | | |
|---|---|---|---|
| 1 | A1 | (+5V) | 24 |
| 2 | A4 | A6 | 23 |
| 3 | A3 | A9 | 22 |
| 4 | A5 | /WE | 21 |
| 5 | A7 | /OE | 20 |
| 6 | A9 | A8 | 19 |
| 7 | A2 | /CS | 18 |
| 8 | A0 | D13 | 17 |
| 9 | D2 | D11 | 16 |
| 10 | D5 | D9 | 15 |
| 11 | D1 | D7 | 14 |
| 12 | GND | D3 | 13 |

IC411

J411

| | |
|---|---|
| 1 | (+5V) |
| 2 | GND |
| 3 | CSYNC |
| 4 | CSYNC IN |
| 5 | PBDATA |
| 6 | PB OUT |
| 7 | 0±1 |
| 8 | LAD OUT |
| 9 | LAD |
| 10 | TCK |
| 11 | |
| 12 | NTSC/PAL |

To 45 P.C.B (For PAL/SECAM format only)

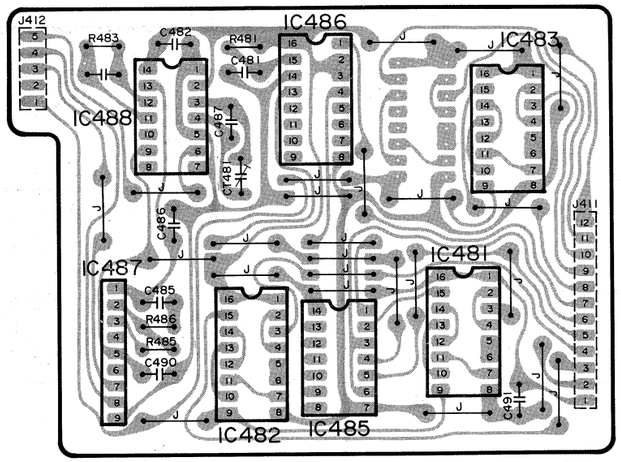
J412

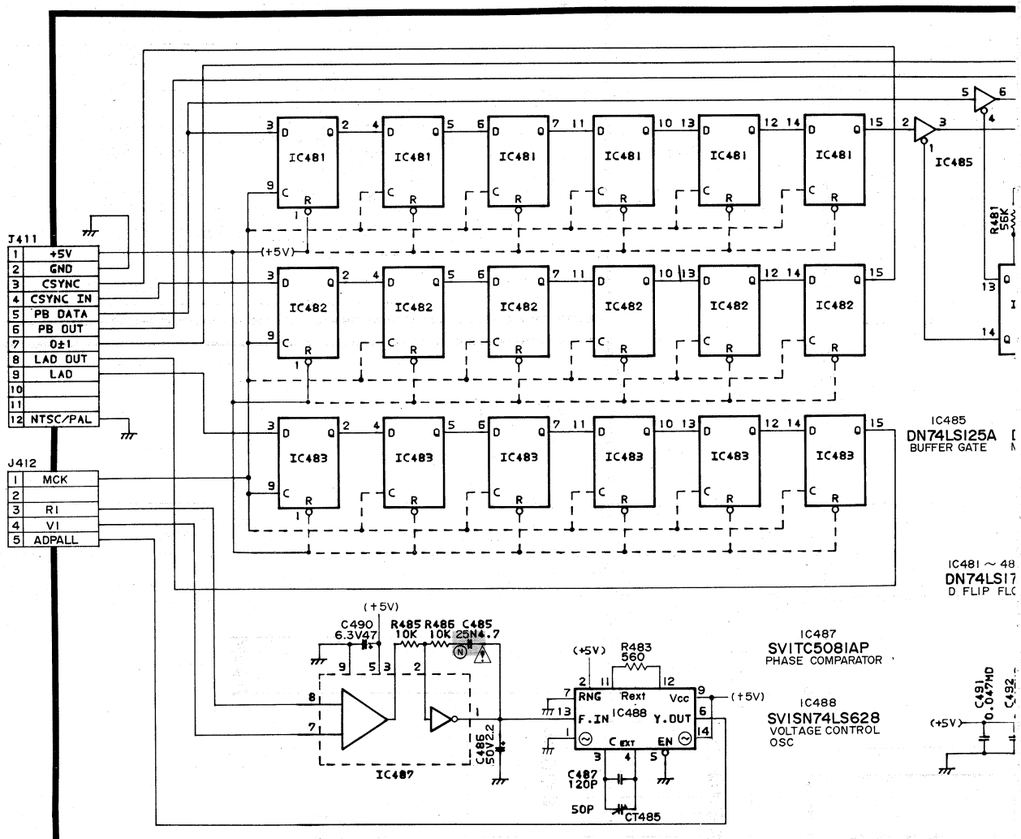
| | |
|---|---|
| 1 | MCK |
| 2 | |
| 3 | R1 |
| 4 | V1 |
| 5 | ADPLL |

To 45 P.C.B (For PAL/SECAM format only)



## 45 For PAL/SECAM format only

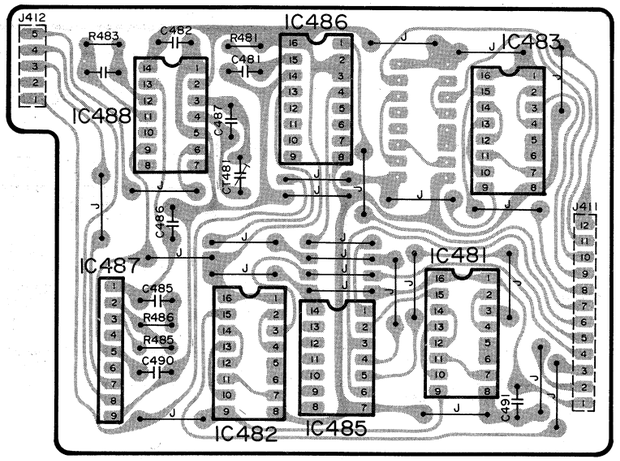


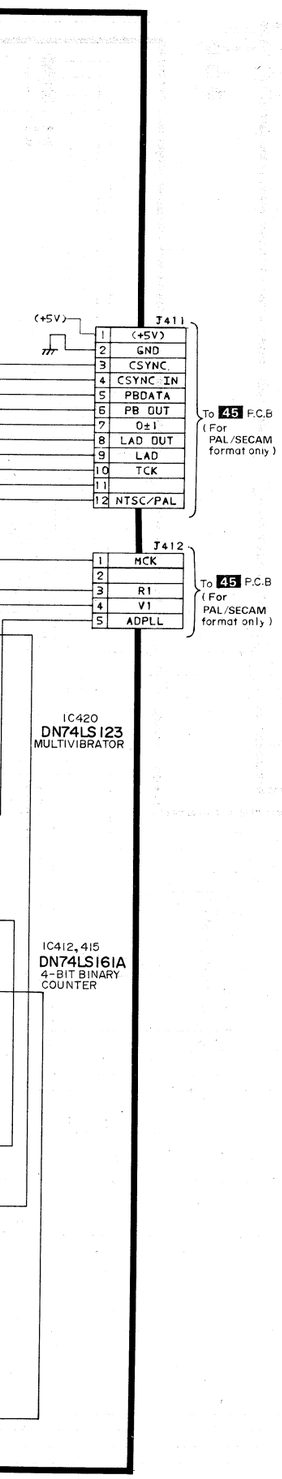



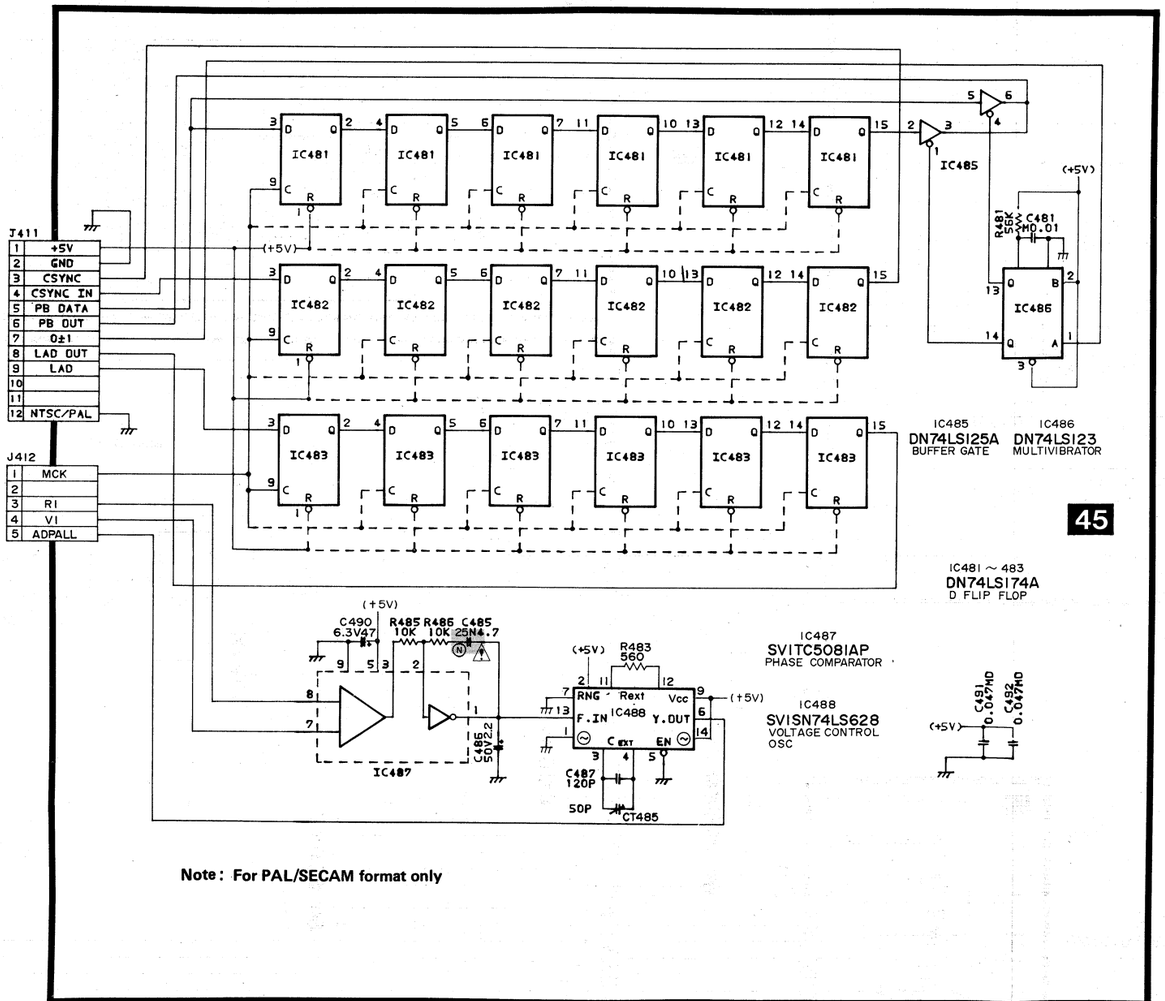

Note : For PAL/SECAM format only

13 14 15 16 17 18 19

**45** For PAL/SECAM format only

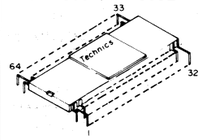
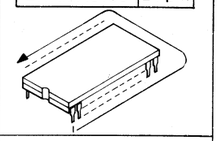
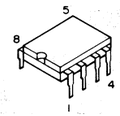
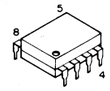
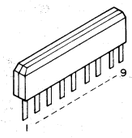
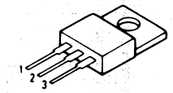
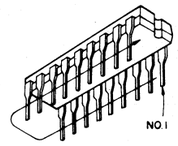
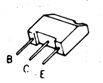
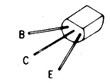
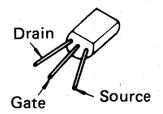
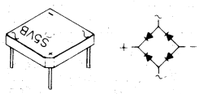
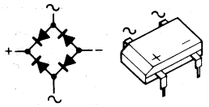
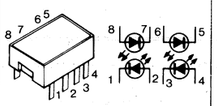
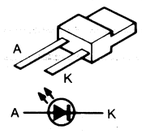
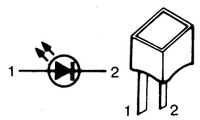
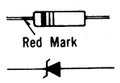
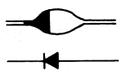
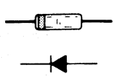



**Note : For PAL/SECAM format only**

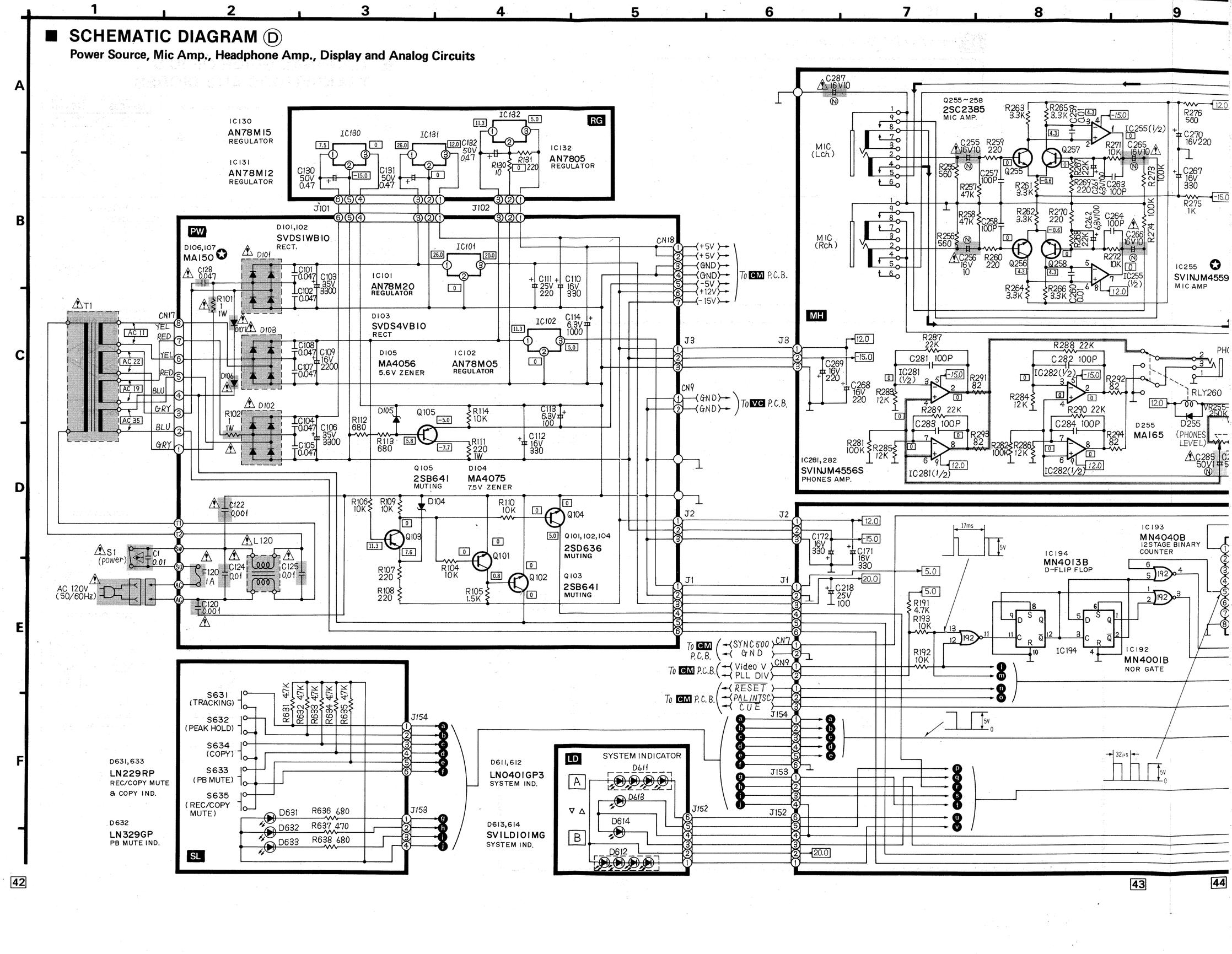
## ■ TERMINAL GUIDE OF IC'S, TRANSISTORS AND DIODES

| | | | |
|---|---|---|---|
| DN74LS00<br>DN74LS02<br>DN74LS04<br>DN74LS74<br>DN74SL86<br>DN74LS126<br>MN4001B<br>MN4013B<br>SVITC40H004<br>SVIUPD4066BC | 14 pin | MN6601, MN6602  | MN6603 28 pin<br>EHKMA6196 24 pin  |
| DN74SL123<br>DN74LS161<br>MN4040B | 16 pin | AN6552, AN6914  | SVINJM4559DS<br>SVITL082P<br>SVITL810CP  |
| MN6631 | 18 pin | | |
| SVIHM6116P-4 | 24 pin | SVINJM4556S  | AN78M05, AN78M12<br>AM78M15, AN78M20<br>AN7805  |
| AN6870N | 28 pin | | |
| MN1420PCF<br>MN1542PCK | 40 pin |  | 2SD641, 2SD636  |
| | | | 2SC2385  |
| 2SK301  | | SVDS4VB10  | SVDS1WB10  |
| LN0401GP3  | | LN229RP (Red)<br>LN329GP (Green)  | SVDLD-101MG  |
| MN4056, MA4068<br>MA4075, MA4051  | | NA26T0-A  | MA162A<br>MA165, MA150  |

SV-110 SV

# ■ SCHEMATIC DIAGRAM Ⓓ

**Power Source, Mic Amp., Headphone Amp., Display and Analog Circuits**



7 8 9 10 11 12 13 14 15 16

MIC (Lch)

MIC (Rch)

Q255~258
2SC2385
MIC AMP.

IC255
SVINJM4559DS
MIC AMP

MH

IC281,282
SVINJM4556S
PHONES AMP.

PHONES

RLY260

D255
MA165

(PHONES LEVEL)

BT255 BT256 BT281 CN2 CN3

AF

IC151
SVINJM4559DS
BUFFER

(REC LEVEL) (REC BALANCE)

IC155,156
MN6631
REC/PB SELECTOR

LPF151 LPF152
L.P.F

IC153,154
SVINJM45
BUFFER

Balance Adj.

D211,212
MA165

Recovery Adj.

D214,215
MA2670-A

IC211,212
AN6552
RECT AMP.

Q211~213
2SD636
BUFFER & SWITCHING

Q214
2SD636
CRC DET.

Q151
2SD636
RELAY DRIVE

D213
MA4068
6.8V ZENER

Q192~194
2SD636
LED DRIVE

D191
MA165

Q191
2SB641
SWITCHING

IC193
MN4040B
12STAGE BINARY COUNTER

IC194
MN4013B
D-FLIP FLOP

IC192
MN4001B
NOR GATE

D193
MA165

IC191
MN1420PCF
MICRO-COMPUTER

IC214
AN687
DISPLAY

13 14 15 16 17 18 19 20 21 22

IC155 IC156

C157 0.1 LPF151 IC153(1/2) -15.0 R171 16K IC153(1/2) 12.0 C165 16V 10 R235 10K R237 100K R238 4.7K Q216 12.0 D151 RLY151 R236 4.7K Q215 R239 100K

R159 2.7K L.P.F R163 2.4K R167 39K R169 18K R175 33K C155 330P C161 47P C159 .00012 R161 2.7K R165 2.4K

C156 330P C160 .00012 R162 2.7K R164 2.7K C162 47P R166 2.4K R168 39K R170 18K R176 33K C166 16V10 R172 16K

IC154(1/2) -15.0 C153,154 SVINJM4559DS BUFFER IC154(1/2) 12.0

Q215,217 2SD636 SWITCHING Q216,218 2SB641 SWITCHING

R223 47K R229 47K Q218 Q217 20.0 19.0 19.2 19.8

Balance Adj.

D151 MA165

R219 43K R220 43K R221 6.8K IC212(1/2) -12.0

C211 50V 2.2 R211 51K IC211(2/2) R213 33K VR211 20K D211 R215 4.7K R217 100K Q211

D214,215 MA2670-A D215 IC213

Recovery Adj. VR212 1M C213 25V 10

C212 50V 2.2 R212 51K IC211(1/2) R214 D212 R216 4.7K Q212 R228 4.7K Q213 D214

R241 100K R232 12K C216 16V 47 C214 25V 10 R218 470K IC212(1/2) -15.0 R222 6.8K

IC213 SVIμPD4066BC LEVEL/TRACKING SELECTOR

OdB Adj. FL201

VR213 10K D216 D217

R227 22K R226 22K R225 47K R224 47K C217 0.047 IC214

D216,217 MA165

IC214 AN6870N DISPLAY DRIVE

R230 4.7K

LEVEL INDICATOR & TRACKING INDICATOR

Q191 2SB641 SWITCHING D191 R196 4.7K R197 3.3K R198 470 Q151 R177 1K R178 4.7K R233 4.7K Q214 D213 R231 470K C215 50V1 R234 470K R232 12K C216 16V 47

Q151 2SD636 RELAY DRIVE

D213 MA4068 6.8V ZENER

IC211,212 AN6552 RECT AMP.

Q211~213 2SD636 BUFFER & SWITCHING

Q214 2SD636 CRC DET. R199 4.7K R190 270 R200 1K Q192

D191 MA165

Q192~194 2SD636 LED DRIVE

R195 10K C193 6.3V 47 Q193 R202 1K R205 1K R208 1K R201 4.7K R203 4.7K Q194 R204 1K C199 10V 22

C194 6.3V 470 C195 0.01 C196 0.01 C197 0.01 C198 0.01

2ms 3.5V 3.8ms 28Vp-p 64μs 32μs 5V

C158 0.1 R150 470K C163 .0039 R173 3.6K C164 .0039 R174 3.6K R149 470K

Note: ⌐¬ ..... Tracking switch "on"

CN4 A3 D/AR GND D/AL REC/PB A/DL GND A/DR EMPH To VC P.C.B.

R253 10K R209 4.7K

VJ C641 16V 10 VIDEO OUT VIDEO IN CN4 CN14 CN1 LINE IN CN4 R601 220 R602 220 C603 0.003 C604 0.003 LINE OUT C601 16V10 C602 16V10 VIDEO OUT VIDEO IN MONITOR JA1 (VIDEO OUT A) (GND) (VIDEO OUT B) To CM P.C.B.

CN6 GND GND To VC P.C.B.

PJ CN13 CN15

SW F17 VEQ +5V To VC P.C.B. J151 S621-1 S621-2 B MASTAR VTR A 2 PLAYBACK MODE 1 BT151 JA2 GND VIDEO IN To VC P.C.B. terminal CN14 CN5 CN16 (B OFF) (A OFF) To CM P.C.B.

F2 CRC MUT (PB MUTEN) To CM P.C.B.

CN8 INT/AUTO COPYM COPY To CM P.C.B.

CN11 PLL LOCK PLL LOCK To CM P.C.B.



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